Goulstonian Lectures

ON THE STUDY OF

GASTRIC FUNCTION IN HEALTH AND DISEASE.

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LECTURE III.*

Part I.

One of the foundations of clear thinking in the tural sciences is classification. With symptomalogy, or the science of the evidences of disease, it ould not be otherwise; and yet, if we set aside the satisfactory division into "organic" and "funcmal," we find that the classification of the dyspepsias as remained to this day in a curious state of confusion. has been one of the objects of my discussion to ow that all gastric symptoms express only a derange- ent of function, for they may occur equally in the bsence or presence of local organic disease and are own to be due to disorders of tonus, peristalsis, and otility. The very word "dyspepsia" signifies sturbed function, but at an earlier date it was clusively used to describe disturbances occurring dependently of organic disease. Thus, Brinton,[1] 1858, although he clearly foresaw that it must ndergo further subdivisions, held that the term plies "not only that a certain amount of digestion (though with difficulty) effected, but that this fficulty is not due to any serious structural lesion. o call by the name of 'dyspepsia' such an impairent of function as we find associated with cancerous ulcerous destruction of the gastric tissues, would," e remarks, "obviously be almost as absurd as to ll strangulation 'dyspnœa,' or to speak of a beheaded riminal as having been rendered 'insensible.'" In 881 we find the late Sir Clifford Allbutt,[2] in his oulstonian lectures, attaching a wider interpretation o the term and appealing for its proper recognition s implying not a disease but a symptom; in his own hrase, "it names not the causes nor the processes of he evil, but its consequences." Gradually there has ollowed a more general acceptance of this usage; think most desirably so, for its employment in the riginal sense has been and still remains very harmful o medical practice. Even now dyspepsia is constantly mployed as a diagnostic label, and while no physician ould be content to enter a case in his index as a case f "dyspnœa" or "insensibility," "dyspepsia" and "indigestion" are apparently very frequent entries. The man of judgment, it is true, reserves the term for hose cases in which he is persuaded of the triviality of the condition or in which there is a cause to be found in some corrigible error of diet or habit. There are others, however, who, whether from faulty tradition or training, obscure their own vision and postpone accurate diagnosis by a too ready substitution of the symptom for the disease. We must all be familiar with cases of ulcer, cancer, appendicitis, cholecystitis, pulmonary tuberculosis, alcoholism, tabes dorsalis, oral sepsis, or psycho-neurosis, in which dyspepsia has too long been regarded as a sufficient diagnosis either by the patient himself or by his medical attendant. And we must all have experience of cases of our own in which the surgeon or subsequent clinical developments have revealed the true cause of unexplained or ill-explained dyspeptic symptoms. Quite recently I was consulted by a man with a long and characteristic story of duodenal ulcer developing into an established stenosis with the symptoms and physical signs typical of that condition. He had been told by six medical men that he had "dyspepsia." A large proportion of all patients who are ultimately shown to have gastric or duodenal ulceration have had to remain content with a diagnosis of "dyspepsia" for months or years, and as the success of medical treatment in these cases and the avoidance of operation depend largely upon an early diagnosis, delay of this kind is, to say the least, unfortunate.

There is, therefore, good reason to plead for the employment of "dyspepsia" in its only permissible sense as indicating a group of symptoms for which a proper cause or causes must invariably be sought, and to urge that any future classification of the dyspepsias must be based on ætiological considerations. In the past attempts have been made to classify on a basis of main symptoms, and to this doubtful plan we owe the origin of such terms as "flatulent dyspepsia" and "acid dyspepsia"—excusable when they were coined but not to be accepted now. In descriptions such as "fermentative" and "atonic" dyspepsia we have witnessed an attempt to classify on the basis of a hypothetical pathology, which can now be superseded, for we have come to recognise that gastric fermentation is rare and that it is exceptional for it to occur apart from pyloric stenosis or obstruction; that hypotonus (for which the term "atony" is sometimes loosely substituted) is usually an expression of general ill-health; and that the nearest approach to genuine atony is the extreme grade of dilatation which only accompanies the later stages of obstructive pyloric or duodenal lesions. Even in the most recent editions of the well-known text-books of medicine there is a complete lack of uniformity and ordered teaching, and terms such as atonic dyspepsia and gastralgia abound. The most accepted plan would seem to be the very artificial classification into sensory, motor, and secretory neuroses, but it is difficult to see how the student can extract from these descriptions any clear conception to guide him in his practice. The division into medical and surgical dyspepsias can meet with no approval. "Surgical dyspepsia" is held to designate a type in which surgery may give or help to give relief, but it might equally well imply a dyspepsia which results from surgical intervention. In no class of case is it more desirable to avoid the cleavage between medicine and surgery which has been the tendency of recent years; in no class of case is close cooperation of medical and surgical opinion more fruitful in results.

If we accept, as a working basis, the conclusions arrived at in my previous lectures, it would seem reasonable to advocate the arrangement about to be described, which recognises at once the importance (1) of assigning to every case and type of dyspepsia a definite basic cause or group of causes; (2) of tracing the gradations between healthy and morbid states; and (3) of regarding all dyspeptic symptoms as expressions of disturbed reflexes. I am aware that this classification is an elementary one and that, consciously or unconsciously, a similar or identical classification must now be widely employed by others, but there cannot, I believe, be any harm in setting it clearly forth. At the least it may serve to emphasise the need for system in the place of present chaos, and to indicate that no such "disease" as "dyspepsia" exists.

Craven Moore[3] has outlined a not very dissimilar classification, and to him, although he gives it a somewhat different application, we owe the term "reflex dyspepsia," which I have previously employed in describing the dyspepsias falling into my fourth group.

Classification of the Dyspepsias.

Group 1. *Habit Dyspepsias.*—Dyspepsias resulting from faulty physical habits. Examples: over-eating, under-eating, over-work, lack of occupation and exercise; insufficient mastication; constipation, or some combination of these factors.

Group 2. *Nervous or Psychogenic Dyspepsias.*—Dyspepsias due to faulty mental or nervous adjustment. Examples: nervous tricks such as aerophagy, nervous exhaustion,

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In Group 5 (Mechanical Dyspepsias) the symptoms are due to destruction of the continuity of the muscle-fibre, or to modification of the mechanisms which control emptying.

We are now in a position to discuss more intimately the nature of the main symptoms in the individual varieties of dyspepsia composing these several groups. For illustrations I have referred principally to my own case-notes and test-meal findings. For the notes of a few of his cases in the investigation of which it was my privilege to coöperate, I am indebted to Dr. A. F. Hurst.

1. HABIT DYSPEPSIAS.

In a small series of cases classified as belonging to this group it is noteworthy that all happened to be men. Of these more than half were between the ages of 27 and 35 and had seen war service. Throughout their service they had been entirely free from dyspeptic symptoms, notwithstanding that some of them had had symptoms before the war. They had returned to sedentary occupations, generally office life. In the remaining cases the patients were older or younger, but were invariably leading unhealthy and inactive or irregular and restless lives. The chief complaints were of discomfort and fullness in the epigastrium developing soon after food, flatulence, and a poor morning appetite, or a capricious appetite. In a few instances, however, the discomfort developed at a long interval after food and was eased by food. A clear definition and localisation of the discomfort were almost constantly lacking and physical examination revealed nothing abnormal. In cases in which anxiety and the fret of civilised toil are added to an unsuitable life discomfort may occasionally give place to real pain simulating that of organic disease. When I have had an opportunity of investigating cases of habit dyspepsia more closely I have found no consistent objective evidence of motor or secretory abnormality. In other words, derangement of function is usually too slight to be susceptible of demonstration by the ordinary physical or chemical methods, although its nature may be readily and reasonably surmised on clinical grounds. The nature of the response and the time of arrival of the discomfort are determined partly by the particular irregularity in the patient's mode of living, but partly also by the physiological characters or habitus of his stomach. Thus the man who takes normal or bulky meals at too frequent or normal intervals, or is of the hyposthenic type, experiences discomfort shortly after meals; while the man who goes too long without meals, or is of the hypersthenic or mentally overactive type, will be more liable to experience discomfort before meals. Treatment is seldom difficult if the patient can be persuaded of the origin of his symptoms. Regularisation of habits, readjustment of meal-times, a reduction in the quantity, particularly of bulky carbohydrate food, with increased exercise, on the one hand, or more frequent meals and relaxation, on the other, quickly bring improvement.

2. NERVOUS OR PSYCHOGENIC DYSPEPSIAS.

Of my cases indexed under this heading men and women provided an equal proportion. Almost without exception they complained of flatulence as a leading symptom and in many I noted active air-swallowing movements during the physical examination. Epigastric discomforts, and more rarely pain, were complained of, but the relationship of symptoms to food was less definite than in the other groups. Worry, fear, anxiety, and noises were the principal aggravating factors. Nausea and capricious appetite and heartburn were also mentioned, and this is the only group in which I have personally encountered the symptom bulimia. Fastidiousness in the selection of food and exclusion from the dietary of one article after another for its supposedly noxious qualities help to complete a familiar syndrome. There is a common association of other visceral symptoms such as palpitations or frequency of micturition and, in women particularly, of vaso-motor disturbances. Before investigating the group I had scarcely expected to find that flatulence was such a constant feature. It is presumably induced in some cases by one of the physical causes already mentioned, but I believe that anxiety alone may initiate the swallowing movements necessary for the production of the symptom. Radiographic and chemical tests reveal no constant departure from the normal. Such investigations should only be undertaken to exclude organic disease or for the specific purpose of relieving a phobia or providing stronger reassurance. Although, as I have stated, the discomforts seldom show an accurate relationship to food, I think they are more liable to develop at those times at which normal gastric sensations are evoked—that is to say, when the stomach is empty or recently filled. Furthermore, the nature of the response, as in other groups, is in part determined by the physiological type or gastric habitus of the individual.

3. (a) TOXIC DYSPEPSIAS.

(i.) The symptoms of *alcoholic gastritis* are too familiar to require detailed description. They include nausea, retching, and vomiting due to irritation of the mucosa and excessive secretion of mucus, and all showing a particular liability to occur in the morning before breakfast; loss of breakfast appetite, due to impaired tonus; and morning and post-prandial diarrhœa due to the achlorhydria. The vomited material consists largely of mucus, and Hurst[5] has pointed out that much of this is derived from the œsophagus. It is often frothy and is consistently referred to by the patient as "phlegm." If pain is complained of it has rather a diffuse and burning character. The same syndrome, but generally in less pronounced form and without the other physical and psychological stigmata of alcoholism, occurs in gastritis due to excessive tea-drinking or gross oral sepsis. Beaumont's experiments on Alexis St. Martin and clinical experience with the gastric tube show that it is also possible for gastritis to occur without any local subjective symptoms. As has been previously suggested, the anorexia of gastritis is probably related to the general toxæmia and perverted metabolism of alcoholism, for in the earlier stages appetite returns with great rapidity when abstinence is insisted upon and almost before the mucosa could be expected to have become normal. Nevertheless the coating of mucus must inhibit those appetite sensations which depend on the ingestion of food, just as it inhibits the reflex secretion of gastric juice which normally results from contact of soluble food with the mucosa. The radiographic findings are variable and of no diagnostic importance. Hyperchlorhydria and achlorhydria both appear more frequently than in health, but achlorhydria is more common in established cases and increasingly so with the duration of the alcoholic habit—it is thus generally present in cirrhosis of the liver. The frequent association of achlorhydria with gastritis has been recognised since the introduction of the one-hour test-meal, but this method cannot detect delayed or transient rises in acidity. Bell,[6] in 11 cases of chronic gastritis examined with the fractional method, reported complete achlorhydria in five cases, hypochlorhydria and low normal curves in three cases, and hyperchlorhydria in three cases. Barber and Ryle,[7] examining 12 cases of acne rosacea, the occurrence of which apart from true gastritis—whether due to alcoholism, tea, or oral sepsis, or to a combination of these causes—is doubtful, found that seven cases showed complete achlorhydria, while of the remaining five one showed no secretion of free acid until after one hour and two showed a temporary high peak of acidity with an abrupt fall to the base line. The resting secretion in cases of gastritis with achlorhydria is small in amount and extremely viscid, consisting almost entirely of mucus. It sometimes has a peculiar rancid odour and microscopically may show an excess of pus cells. Before accepting the pus as of gastric origin it is important, as Ganz[8] has shown, to compare the cell content of the spittle and the fasting-juice. Mucus is generally present in excess

deficient oxygenation. In chlorosis and secondary anæmias, heart-burn and nausea are special symptoms which seem to occur with more than accidental frequency. Acidity is generally low, and complete achlorhydria is not uncommon. In Addison's anæmia complete achylia is an essential part of the disease and not secondary to the anæmia; in fact, it precedes its development and persists even after the hæmoglobin and red cells have returned to a normal figure. The rate of emptying in most cases of achylia is rapid, and a painless morning or post-prandial diarrhœa is common. I have once or twice met with a complaint of hunger discomfort in association with achylia, due presumably to the rapid emptying.

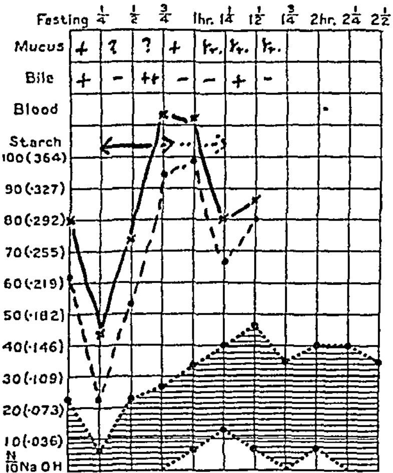
4. IRRITATIVE DYSPEPSIAS.

The painful dyspepsias due to reflex stimulation from an ulcer or inflammation of the gall-bladder or appendix have already been discussed at some length, and I shall here only draw attention to certain special features pertaining to each example. It should again be explained that the secondary gastric symptoms alone are under review and not the symptoms directly attributable to the local lesion.

Duodenal ulcer, from its close proximity to the pylorus and its constant situation, is the most true to type. The character of the pain is gnawing or aching or sometimes referred to as a feeling of great pressure in the epigastrium. Its localisation is in mid-epigastrium or to the right of this point. It is confined to an area which can usually be covered by the tips of two or three fingers, but it may be diffused about the epigastrium and sometimes rises into the chest. It commonly appears between two and four hours after the last meal, but the interval of time is determined by the size of the meal and the motility of the individual stomach. It varies greatly in its severity, but is only very occasionally completely incapacitating or agonising. Langdon Brown[11] has recorded excessively severe pain in the case of ulcers adherent to the pancreas; I have several times confirmed this observation, and the only cases of duodenal ulcer in my experience in which it has been necessary to give morphia for relief of the pain were complicated in this way. The pain lasts for varying periods up to and beyond one hour, in fact until the stomach is replenished or completely empty or until relief follows vomiting or the administration of drugs. The night pain shows the longest duration and may last for many hours because it is not automatically relieved by a meal. The pain is initiated and aggravated by hunger, or rather by readiness for food, by fatigue, cold, worry, and sometimes by smoking. It is relieved by food, rest, warmth, and peace of mind; by alkalies, and by belladonna and atropine. Appetite is usually good. The radiographic signs—namely, exaggerated tonus and peristalsis, and sometimes rapid evacuation of the meal—need not again be discussed, but test-meal findings show certain characters which deserve closer consideration than I have previously given to them. The fasting juice in a considerable proportion of cases is increased in amount up to 80 or 100 c.cm. or more; it is perfectly clear, limpid, and highly acid and contains little or no mucus. After the initial fall in acidity due to withdrawal of the fasting specimen and dilution with the gruel, there is a steady rise to a high point, followed either by a steep drop with excessively rapid emptying as in Chart 14, or a sustained plateau with rapid or normal emptying and continuous after secretion as in Charts 15 and 16. In these cases there is evidence of a hypersecretion and continued secretion which are seldom found in other dyspepsias. In my own experience, hyperchlorhydria with the additional findings now mentioned is almost pathognomonic of duodenal ulcer. According to the combined figures of Bell[6] and Hunter[12] hyperchlorhydria is present in 70 per cent. and normal acidity in 30 per cent. of cases of chronic duodenal ulcer, while hypochlorhydria and achlorhydria are not recorded. As will be shown later, the test-meal findings in duodenal ulcer, in addition to being of contributory diagnostic value, may also give help in determining the suitability or otherwise of individual cases for the operation of gastro-jejunostomy.

Gastric ulcers show a wider range of variability in position and their symptoms are consequently less defined. In so-called "typical" cases or in those with a story of hæmatemesis a diagnosis may sometimes be made on the anamnesis alone, but it will be agreed that the history is often misleading. For instance, there may be vomiting without pain; flatulence or discomfort may be the only symptoms mentioned; and the time relationships to food of pain or discomfort are inconstant. The pain is greater with the deeper ulcers; it has the same character as the pain of duodenal ulcer in so far as it is described as gnawing or aching; it is felt in mid-epigastrium, or to the left of this point; it is confined to an area which can be covered by the tips of two or three fingers, but may be much more widely diffused. Excepting in old-standing cases with extensive ulceration and physical exhaustion or secondary anæmia, or in the presence of organic hour-glass contractions, it is seldom agonising or wholly incapacitating. It lasts for varying periods; is initiated by food, and more by solids than by fluids; and is more troublesome with protein foods requiring prolonged gastric digestion. It is relieved by rest, starvation, and vomiting. Appetite is not good and the patient "is afraid to eat." Partly by reason of its higher incidence in women hypotonus is more common than hypertonus. The most important radiographic sign of perverted muscular function (and this is by no means constant) is the incisura or spasmodic hour-glass constriction. When the ulcer is situated close to the pylorus and the stomach is hypertonic the symptoms of duodenal ulcer are reproduced and hyperchlorhydric curves are obtained. Otherwise the fractional test-meal is of small diagnostic value, for every variety of curve may be given from achlorhydria to hyperchlorhydria, and normal curves predominate. In the combined series of Bell[6] and Hunter[13] the figures for gastric ulcer were as follows: normal acidity, 57 per cent.; hyperchlorhydria, 33 per cent.; achlorhydria, 10 per

CHART 14.



Duodenal ulcer with extreme "hurry."

According to Hurst,[14] patients with duodenal ulcer have stomachs of the hypersthenic type before they acquire their disease, and certainly the hypersthenic characters persist after healing of the ulcer But in view of the fact that other and more distant lesions which can hardly be attributed to the hypersthenic diathesis are frequently found in association with hypertonus and hyperchlorhydria, it is also necessary to consider whether the gastric type may in some cases or some degree be determined by reflex stimuli from these lesions The following figures from a small series studied by Dr T W. Turner and Dr P I Briggs (communicated) suggest that the liability to hypertonus and hyperchlorhydria is greater with lesions below the pylorus, and that lesions above this sphincter influence gastric tonus and acidity in only a very small degree (Table VII)

TABLE VII —(*Turner and Briggs*)

Disease	Percentages (nearest whole figure)		
	Hypertonus	Normal tonus	Hypotonus
Duodenal ulcer (70 cases)	43	55	2
Gall-stones and cholecystitis (44 cases)	21	76	3
Appendicitis (31 cases)	32	59	9
Gastric ulcer (16 cases)	13	67	20
Normal (Moody, Van Nuys, & Chamberlain) both sexes	12	78	10
	Hyperchlorhydria	Normal curves	Hypochlorhydria
Duodenal ulcer (70 cases)	68	28	4
Gall stones and cholecystitis (44 cases)	21	66	13
Appendicitis (31 cases)	19	75	6
Gastric ulcer (16 cases)	13	75	12
Normal (Bennett and Ryle) (males only)	15	80	5

The following cases illustrate types of dyspepsia produced by other forms of remote peripheral irritation

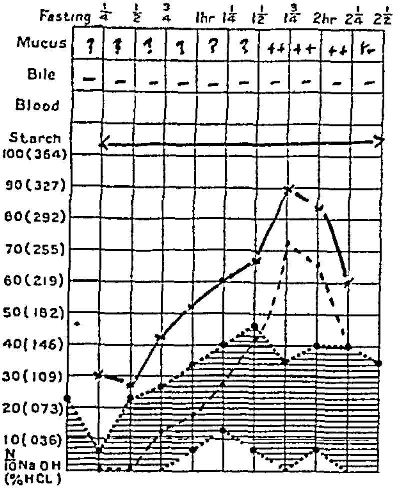
Irritative Dyspepsia Produced by a Fatty Epigastric Hernia An old soldier, aged 52 complained of epigastric pain which had troubled him for three years, but which was becoming much more severe The pain came on two to three hours after food and was relieved by food and hot water He also had night pain He had lost two to three stone in weight and had particularly noticed that the action of stooping to lace his boots induced pain *There was a point of acute tenderness in mid-epigastrium* At this point a small fatty hernia through the linea alba was discovered which gave a slight impulse on coughing The radiologist, Mr Magnus Redding reported a hypertonic stomach and spasm in the pyloric region Mr L G Slesinger operated and removed a protrusion of extraperitoneal fat which was causing tension upon and dimpling of the parietal peritoneum The abdomen was simultaneously explored and no lesion of stomach duodenum, gall bladder, or appendix was revealed The patient experienced no further symptoms and gained a stone in weight in the first month

The extraperitoneal layer, of all the somatic tissues, is the one which becomes most sensitive in peptic ulcer, so the case further exemplifies the reversibility of the viscero sensory reflex—a painful stimulation of the parietes, in this instance—calling forth painful contractions of the stomach

In the special sense disturbances there is a particular liability to nausea and sickness as exemplified in the following case of ocular dyspepsia, and in migraine and Ménière's disease They therefore constitute an exception to the rule that peripheral irritation produces "pressor" effects

Ocular Dyspepsia —A woman, aged 27, conscientious and of nervous habit consulted me for attacks of nausea together with a certain amount of "indigestion" and flatulence There had been a tendency to "sick attacks" in childhood, especially when she went to parties, but she remained free from symptoms between the ages of 8 and 20 The attacks complained of lasted from one to four days and were sometimes accompanied by a mild diarrhœa They occurred at, roughly three weekly intervals and particularly on Sundays *The symptoms were usually most troublesome about an* hour after breakfast or tea She had a good colour, was not anæmic, and the physical examination showed nothing abnormal Her eyes had been tested when the attacks began and were then pronounced normal An initial rest from work and general hygienic measures gave no relief Radiographic and chemical investigations were negative The attacks became more frequent and she had to give up her work as a teacher Finally, on re interrogation she admitted to slight mistiness of vision and headache during the attacks Mr A W Ormond examined her eyes, found well marked astigmatism, and prescribed appropriate lenses *In the next four months* she had only one slight attack, reported herself as "ever so much better and stronger," and for some two years later has remained well Headache was never a prominent symptom and there was no teichopsia, but obviously the case *belongs to the same class as the* migrainous dyspepsias

CHART 17.



From a case of tabes with frequent gastric crises

Tabetic Dyspepsia —I have had no opportunity of close study of the disturbances of gastric function accompanying tabetic crises Dr C P Symonds tells me that he has observed the stomach with X rays *after an opaque meal* during a tabetic crisis and that peristalsis was greatly exaggerated The severity of the pain in some cases, the persistence of the vomiting, often without much pain, in others, the abrupt arrival of the attacks at longer or shorter intervals without obvious reason and with no clear relation to food, occupation, fatigue, or other external circumstances are among the leading characteristics Chart 17 was obtained between crises, which were occurring at very frequent intervals, from the only tabetic patient on whom I have had the opportunity of performing a gastric analysis at a time when gastric symptoms were predominant The climbing curve suggests pyloric hypertonus

5 MECHANICAL DYSPEPSIAS

(i) *Pyloric Stenosis and Obstructive Gastric Carcinoma* —When stenosis develops from cicatrisation of

more severe than ulcer pain and is immediately aggravated by food. The frequency of anorexia has already been stressed. In some degree the dyspeptic responses even in carcinoma ventriculi may be determined by the physiological habitus of the stomach. I have in the past few months seen two cases of gastric carcinoma with a syndrome almost typical of duodenal ulcer. In both cases the patients were of the hypersthenic type, broad chested and with a wide epigastric angle, and the pylorus itself was not involved. Achlorhydria, the development of which in association with carcinoma of the stomach was first shown by Golding Bird[18] in 1842, is less constant in non-obstructive than in obstructive carcinoma of the stomach, but it is generally found in diffuse carcinoma of the "leather-bottle" type.

I have reserved until the last a discussion of the derangements of function which follow upon the common operation of gastro-jejunostomy for ulcer and upon the complications attendant upon it.

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(To be concluded.)

An Address

ON

SUGGESTION IN SOCIAL LIFE

Delivered at St. Bartholomew's Hospital, under the auspices of the Guild of Public Pharmacists on Jan. 15th, 1925, with Lord Stanmore, Treasurer of St. Bartholomew's Hospital, in the chair,

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MY LORD, LADIES, AND GENTLEMEN,—In the first place let me express my sincere thanks for the compliment paid to me in asking me to address the Guild of Pharmacists, comprising, as I understand it does, the representative organisation of all pharmacists holding appointments in H.M.'s Services as well as pharmacists serving in hospitals, infirmaries, and dispensaries.

It is difficult adequately to appreciate as they should be the necessary qualifications of the modern pharmacist without a feeling of wonder at his efficiency, and it is clear that he of the future will have a much more complicated list of subjects to master than his predecessors have had, and for this responsible duty he must possess a mind above the average order if he is to prove a competent pharmacist. I looked up the meaning of this word in the new Oxford Dictionary and I find it means one who prepares and dispenses medicines, pharmacy being described as a medicinal potion, but I think this meaning too narrow, for let me state here that the remedies the pharmacist is called upon to dispense are by no means the complete and final agents in the cure of disease, for the chief and proximate agent is the subtle, elusive, but yet definite powerful influence of one mind upon another—i.e., the power of suggestion—which in psychology is a mental process by which an idea becomes an act—in other words, the transformation of an idea into an act. The remedy is dispensed and taken in the firm faith, belief, and hope of a cure; the idea of recovery and restoration is believed in; it may be logical or illogical, but through suggestion the idea is apprehended as the means to secure health, and in this wonderful influence of suggestion the work of the pharmacist plays a considerable part. The value of the pill or the potion, the tabloid or the tincture is considerably enhanced by suggestion. The facility with which suggestion acts depends greatly upon the fashion or vogue which appertains to things at the particular time, and we shall see later that imitation plays its part in the influence of suggestion, and some knowledge of the mind is therefore necessary in order to understand how suggestion operates.

POPULARITY OF THE STUDY OF PSYCHOLOGY.

For this reason, and after some deliberation, I decided to take as my subject some aspect of the Mind, which is the inner experience relating to the feelings, to ideas, and to the power we have to react to these by the efforts of the Will, and I am strengthened in my decision by the fact that of late there has been a very great interest taken in problems of the mind, more especially since the war, and in the direction of studying mental suggestion. Ordinarily the term suggestion implies that one idea will recall another to the mind which has been previously associated with it, but throughout this paper I shall use suggestion as any idea which is followed by action, not necessarily when the person is conscious of it and not necessarily an act of the Will or Volition. Indeed, this result may take place under different degrees of consciousness, that is, during the waking period, in partial sleep, or during the hypnotic state. It is for such reasons that the study of psychology has become so popular, and we probably tend, more than in the past, to examine into our own minds, a process called "introspection." We certainly tend more often to look into other people's minds, and by the process of interpretation draw inferences and reach conclusions not always too complimentary or fair to the objects of our experiments. It is not improbable that before long no one will be permitted to have a banking account unless he has satisfied a standard test at some psycho-technical laboratory. At any rate there has been a revived interest in mental problems, as to how ideas have arisen and whither they tend. We are anxious to see how our ideas are sorted and arranged, how they combine to form motives, how motives may be analysed, and how behaviour and conduct are directed and controlled. It is claimed for this study that psychology has already helped to make child life interesting, if not fascinating, that the dullest novel can be read with pleasure, and that bores when psychologically presented may be transformed into the most engaging personalities. As to this added interest in psychology let me use a simile—viz., the motor car. No driver would ever dream of using a machine without first finding out something about its mechanism and how it worked. If he neglected this modest preliminary study, several interesting things might happen; perhaps the car

attached to the idea that secures its arrival into the focus of consciousness. Ideas are not socialists, they *hate equality*, they are *constantly and continuously* competing and struggling to reach the dome, and it is clear therefore that a suggestion made to the *mind with its appropriate feeling may reach the* summit if the feeling attached to it is sufficiently strong. An inscription over the entrance into our school buildings, "Whatsoever thy hand findeth to do, do it with thy might," is a suitable suggestion to reach the dome, and success depends on the feeling attached to it and its application.

THE ACT OF REASONING

Although ideas in the mind, until focused, are confused and chaotic they nevertheless do tend of their own accord, to assort themselves, but only according to certain laws; for instance, those that are similar tend by their similarity to be grouped together—e.g., a cross-Channel passage suggests certain unpleasant sensations felt on a similar previous trip; a political meeting suggests disharmony if not rowdiness which occurred on a similar *occasion elsewhere, and Harley Street suggests eminent* doctors for we knew at least one there. Also, those ideas that have occurred together in point of time *tend to be associated by "contiguity"—e.g., picking* primroses suggests early spring; an acid and alkali together will burst the stoppered phial, and to suggest their association is to expect a calamity; to be stopped on a clear road by a policeman when motoring suggests the question of speed limit, for the event has occurred before. We cannot have ideas without feelings, and with them a time element or a likeness to others, for they must first be judged or cognised, which is an act of the Reason. In Reasoning we pass from one judgment to another deductively when we reason from general principles to particular cases. It is the work of the Reason to criticise and to compare ideas, but the Reason is much influenced by the feeling associated with them, *in other words* by their affective tone—i.e., whether such ideas be pleasurable or painful.

WILL POWER

There is one other element of the Mind beside the feelings or sensations, and the Reason, which we have not considered, yet it is the most important of all, indeed it is the only one that differentiates man from the lower animals. This is the Will, the power of inhibition, of self control, the power to say "No!" It is by the exercise of this faculty that man can claim to rise to a higher sphere of action and conduct. It is the Will that suppresses the passions, that governs the instincts, and controls the emotions associated with our perceptions, ideas, and concepts, and so prevents their exercising an undue influence over our actions. It is the Will that collects the momentary sense impressions, the fleeting ideas that pass in the flowing stream of the mind, and it is the Will that collects the memory pictures stored up *in the brain* cells and brings them into the focus or the dome of attention. In the whole mental field it is the Will which *occupies* the sole *directing* position. For instance, when preparing this paper I had to fix my attention, to experience many struggles in order to exclude distracting ideas and to prevent my mind from wandering into other channels. At times I had to use a mental effort to keep my attention fixed on my subject and so complete the task I set myself to perform. It was a conscious effort, but it was essential that I should finish my task, and the conscious effort was the measure of my Will power or of my volitional exercise. In the opinion of competent psychologists there is still another source of action in addition to and apart from the Will, and *that is the power of suggestion, which arises from an* idea within the Mind. The starting point of suggestion is some idea, which may not be apprehended by the conscious *mind, but if it is, it then becomes a* 'direct' suggestion; the clergyman in the pulpit makes a direct exhortation or suggestion to his congregation, the surgeon advises an operation, or M. Coué *commands his patient to repeat he is every* day getting better and better; and when I present a complicated prescription to the pharmacist it is *a case of direct suggestion that I want it dispensed*, it is a transformation of an idea into an act, and the suggestion may be our own from within (auto-suggestion) or through others from without (hetero-suggestion), yet even a hetero-suggestion becomes an auto-suggestion in the end.

"DIRECT" AND "INDIRECT" SUGGESTIONS

As we know, the Will and the Reason exercise an *inhibitive or a controlling power over suggestions*; it is indeed the whole aim of education to control and direct the mind and so to prevent irrelevant suggestions from intruding upon it. Thus there is always a struggle between the orderly control of the Will and the sudden impulse to act on suggestions. The influence of direct suggestion is less powerful than is that of 'indirect' suggestion which occurs when the mind is at rest or inactive; indeed, when the mind is fully occupied and engrossed it is difficult to get any direct suggestions to act, as is recorded of the philosopher whose wife was about to present him with an addition to their happiness, for when the nurse announced, "Please Sir, it's a boy," he coolly replied, "Ask him what he wants, I am busy," and later when the nurse called out, "Your wife is dying, Sir," he replied, "Tell her to wait till I come"; or as was the case with another searcher after truth who was equally engrossed in his meditations, when the messenger rushed in with the alarming news that the house was on fire, he calmly requested the messenger to convey the news to his wife, *as he never interfered in domestic* affairs. These and stories of men in action being so overwhelmed with mental excitement as not to know they were wounded, show that when the Mind is fully absorbed suggestion acts with difficulty, there is no room for distracting thoughts from without; but when the mental tension is relaxed the influence of suggestion is exceedingly strong, for the imagination then runs riot, the Will and the Reason are both suspended and the Mind is free to wander in obedience to half-conscious suggestions. In mental states of reverie, "mooning," or abstraction, the mind is in a suggestible state ready for new ideas to be presented. Children when playing games are thus suggestible and are being unconsciously moulded in conduct and character every minute, and therefore good suggestions by example and precept are most important, which supports the view of the Jesuit, that if he had the care of the child for the first seven years, anyone can have it *afterwards*, implying that unconscious suggestion would by then have become so organised that no subsequent influences could neutralise *those from early teaching*. Such 'indirect' suggestions made in infancy leave indelible traces on the mind, which is "wax to receive *and marble to retain*," and so impressions of training once received in early life have the quality of permanence; nevertheless we are unconscious of them as they do not ordinarily reach the conscious mind, but yet in spite of this they form the trend or tendency or bias of the individual in later life, and it is upon the indirect influence of early suggestions that the permanent conduct depends. The periods just before sleep or just before awaking are the most favourable to suggestion, as we know ghost stories are more readily believed in towards the hour of sleep, partly because suggestibility is most marked at the period of approaching sleep and partly also because of the state of *fatigue* then felt, when there is less vigour to resist suggestion. It is claimed that suggestions from the mother repeated nightly whilst *the child is being put to sleep must bear good fruit* in after life. Sleep is not necessary to suggestibility, it only facilitates it, as we know to be the case in the hypnotic state, which is one of artificial sleep. Some of us may have suddenly awaked from sleep

by which "much ease will result." For insanity the unfailing remedy consisted in injecting the juice of beet into the nostrils—probably a cure if it could ever be got up there. The plague was treated with a live pigeon cut in two parts and applied to the soles of the feet. The heart of a fowl, the liver of a mole, and the foot of a tortoise were probably the precursors of the poly-glandular tabloid and an anticipation of our present endocrine therapy. To-day the fashion is for vaccines, serums, and antitoxins, the blood being regarded as the great battle-field in which proteins and bacteria are contesting for a victory over globulins and precipitins—i.e., so long as the life of their host endured under the treatment.

GESTURES IN MEDICINE.

It must not be thought that we of to-day are free from "gestures" in medicine. Not long since it was suggested that human beings had in their natural evolution approached too near to the herbivora, and man's inside was too long. On the authority of a great surgeon everyone was advised to have his colon excised and his internal economy short-circuited, again transforming an idea into an act. The suggestion that persons should be divested of any part of the alimentary tube which had hitherto served to assimilate his nourishment did not receive a too cordial support and the vogue dropped. Fortunately, a more sensible view of the functions of the 32 feet of our inner tube was taken, but a new fashion was initiated—viz., intestinal antisepsis; and liquid paraffin became a popular remedy; so much so, it is stated, that shares in the Persian oil fields rose considerably in price on the Stock Exchange. How long the suggestion of internal lubricants or of intestinal disinfectants will last, it is not safe to predict: but it is certain that just as poly-pharmacy has had its day, so these suggestions, together with sandwiches of pancreas and endocrine preparations, may also have their day, and the treatment of the future may more and more tend to rely on common-sense to avoid "the first occasion of sickness," as the ancient physicians pronounced it, and "to take away the evil effects of the same," as was then taught, which is the encouragement of the *vis medicatrix naturæ*, or of the inherent tendency to get well that resides in every living tissue. At present some of the "colloids" are having a struggle to keep their places as fashionable remedies; but the latest suggestion in treatment is to provide a supply of vitamins, which have never yet been seen or separated by mortal man, yet they are resident in milk, vegetables, and fruit; and lest they be lost it will probably be suggested that man should once again reside in a garden and have his fruit and vegetables near, and also that his herd should be milked at his gate so that he should not lose the vitamins recommended to him. It must therefore not be assumed that we—of to-day—are free from using suggestions. The classic doctor in recent times was a bearded, middle-aged, grave, and pensive figure, sitting—as in Luke Fildes' picture—by the bedside of a sick child and more correctly holding a wooden stethoscope in his hand. To-day such a picture is out of date, being replaced either by an attractive lady or by a clean-shaven young man, dressed in tweeds, and holding in his hands not the stethoscope, but the hypodermic syringe and an ampoule, the up-to-date young physician duly deliberating how many cubic centimetres of detoxicated serum he contemplated injecting into his patient subcutaneously.

I am not certain whether the Freudian cult may not (according to Megaw) have suggested a still later picture of the doctor in which symbolism reigns supreme: the wooden stethoscope has now become a phallic emblem; the patient's attention is transferred to the analyst, whose position is also "father-confessor," the patient's mind, body (and estate) having been sublimated without resistance into his power. This picture may be further adorned by two statues erected to represent Œdipus Rex on one pedestal and the hypothetical Censor on another, both in perpetual conflict over the solution of a dream which is being dramatically related. The theme of this picture is "*cherchez la femme*"; a subject which has continuously, since the Trojan War, supplied material for the painter's canvas, but which of late has suffered an acute revival even in medicine.

SUGGESTION IN CLOTHES.

Possibly no suggestion is more powerful than the fashion set by clothes, and especially is this the case in our Western civilisation. Formerly clothes conveyed the distinction of a class and indicated rank. They therefore had to be distinct and striking. In this way they attracted attention and the clothes were probably admired. An old book on medicine, dated 1619, laid down as the duty of woman, "to serve God and to maintain man; to wear garments that were comely and strong—made to preserve health rather than to adorn the person." To-day things have changed, and a fashionably-dressed woman is no uncommon sight, for she is bound to attract attention and her clothes generally produce a powerful sensation, which can only be kept up by originality of design, and by some special style or new colour. A woman with a fashionable hat from Paris and stylishly dressed—however scantily or "cobwebby," or "feathery" this may be—is much happier and more self-confident than another who is dressed more healthily and more comfortably, but less fashionably, yet who is superciliously described by the others as a dowdy frump. Clothes more than anything else lose their attraction to their fashionable wearers when they become familiar and when they cease to produce a new sensation. So great to-day is the triumph of democracy that there is a marked tendency for the general adoption of one fashion by all classes; the only sign of rank and distinction being shown in the quality and cost of the materials selected. When clothing indicated occupation, they were voluntarily worn by such as the clergy and the nursing profession, as also by the representatives of the law. These upheld in their garb the high rank and dignity of their calling. The costume that indicates occupation tends to be resented to-day by such as are in domestic service, whilst the railway official, the postman, and the policeman still retain their distinctive garbs.

FOOD AND THE ARTS.

The fashion in food has also very considerably changed in recent periods; a variety of foods, rather than the *pièce de résistance*, is the fashion to-day.

The influence of suggestion extends even to the arts, as witness the interpretation of the beautiful and the true by the futurist and the cubist, who are extravagant and misguided representatives of the artistic set.

Suggestion plays a greater rôle in our lives than we imagine. It is the basis of imitation and so begins unconsciously in very early life. Its highest form and probably its most agreeable presentation is in the best actors on the stage, who pourtray by imitation the most perfect characters that can be suggested to us—or the reverse.

Low-class cinemas play a great part in suggesting assaults, malicious damage, and theft to the sensitive minds of young people, who are not criminals but only eager for adventure. Many instances are recorded in the daily papers. A youth took a knife and with it stabbed another boy, and the father stated "picture-houses are to blame for the whole thing." A Dalston boy witnessed a hanging incident. He went home and repeated the occurrence with a fatal result. A boy burgled at Upper Clapton and confessed to seeing the whole thing done throughout at what he called the "public picture gallery," and there is no possible doubt but that pictures thus presented exercise through suggestion a marked evil influence on conduct in the sensitive and impressionable minds of the young.

interpreting results If, however, there is a reaction on the control side—i e , a pseudo reaction—then the question of susceptibility or immunity resolves itself into a comparison of the two reactions If the areas on both sides are equal, the reaction is pseudo negative If the reaction is larger with the unheated toxin, then it is described as pseudo positive

Preparation of Toxin

The method of obtaining the toxin, as originally recommended by the Dicks, consists in the collection of condensation water from a series of inoculated sheep blood agar slopes after varying periods of incubation Other workers, including Williams and his colleagues,[*] have made use of horse blood broth Zingher[*] prepares the toxin from pneumococcus broth to which has been added 5 per cent citrated horse blood His cultures are incubated for five days, after which 0 5 per cent carbolic acid is added, the resulting precipitate being allowed to settle out and the supernatant fluid being used for test purposes Huntoon[*] obtained toxin most readily by using broth containing large amounts of horse blood, and by incubating the medium for seven days To get rid of the foreign protein he acidifies the cultures with 1·0 per cent acetic acid and then carries out a precipitation either with ammonium sulphate to 60 per cent saturation or with sodium chloride to 20 per cent saturation In either case the resulting filtrate is dialysed before use

The process which has given the best results in our hands is a modification of the original Dick method and is as follows To trypsinised agar in the melted state and contained in a series of Roux bottles there is added fresh rabbit blood—1 per cent to 2 per cent , or human pleuritic fluid—5 per cent to 10 per cent The medium after thorough mixing is allowed to set hard and the surface of the agar is then flooded with 2 0 c cm of a young broth culture of *Streptococcus scarlatinæ* The strain of organism we have used is the Dick Dochez strain from the *National Collection of Type Cultures* *After* 18 to 24 hours' incubation there is added to each Roux bottle 5 0 c cm of carbol saline It is possible by gently rolling this amount of carbol saline over the surface to collect as a dense suspension the whole floating growth from the surface of the agar The total amount of fluid in the bottle is then removed by decantation The pooled contents of a series of Roux bottles is then centrifuged at high speed, when the streptococci come down as a dense cake, while the supernatant fluid is passed through a Berkefeld filter, tested for sterility, and finally put up in suitable dilutions for the skin test Specimens of toxin prepared in this way, which has the merit of simplicity, have been found to give good Dick reactions in dilutions of 1 in 2000 up to 1 in 30,000 In our experience toxin taken from Roux bottles incubated for longer periods does not reach such high titres, and we believe that it is in the short period of incubation that the efficacy of the method resides Another advantage of toxin prepared in this manner consists in the fact that it but rarely gives rise to pseudo reactions

Precipitation of Toxin of Streptococcus Scarlatinæ

The toxin of *Streptococcus scarlatinæ* can be precipitated out of condensation water preparations by means of alcohol

Experiment I

A condensation water toxin was tested out on a selected series of cases in dilutions of 1 in 5000 and 1 in 10 000 The results were as follows —

	Positive	Negative
Toxin 1 in 5000—		
Non-scarlet	3	–
Scarlet	1	3
Toxin 1 in 10 000 —		
Non-scarlet	2	3
Scarlet	–	[illegible]

Eight volumes of alcohol were then added to this toxin The resulting precipitate was separated by centrifuging redissolved in carbol saline, and made up to its original volume The result of skin tests with dilutions of this toxin was as follows —

	Positive	Negative
Toxin 1 in 1000—		
Non-scarlet	7	–
Scarlet	[illegible]	5
Toxin 1 in 5000—		
Non-scarlet	3	–
Scarlet	–	4
Toxin 1 in 10 000—		
Non-scarlet	1	[illegible]
Scarlet	–	[illegible]

These findings show that the toxin can be removed from solution by precipitation with alcohol, and also that the loss in toxin during the process of *precipitation is probably only slight A point of* considerable interest to which we will refer in another report, consisted in the fact that, of the scarlet fever cases giving a positive reaction, one was a case which relapsed on the twenty eighth day of illness one had myocarditis with multiple abscesses, and two had profuse nasal discharge

Experiment II

The same condensation water toxin as that used in Experiment I was precipitated with four volumes of alcohol After removal of this first precipitate the filtrate was reprecipitated by adding four more volumes of alcohol Each precipitate was then made up in carbol saline to the original volume of the toxin and dilutions of 1 in 2000 were used for skin tests The results were as follows —

	Positive	Negative
Four volume alcohol precipitate—		
Non-scarlet	–	1
Scarlet	–	4
Second alcohol precipitate—		
Non-scarlet	–	3
Scarlet	–	7

This experiment shows that the first precipitate contains toxin and that the second precipitate either contains no toxin or toxin in insufficient amounts to differentiate between scarlet and non scarlet cases *when used in the dilution indicated*

Experiment III

A condensation water toxin was tested on a selected series of cases in two separate dilutions with the following results —

	Positive	Negative
Toxin 1 in 2000—		
Non-scarlet	5	–
Scarlet	[illegible]	3
Toxin 1 in 1000—		
Non-scarlet	4	–
Scarlet	–	3

Two volumes of alcohol added to this toxin gave a heavy precipitate which was removed, the filtrate being reprecipitated with two more volumes of alcohol The first and the second precipitates so obtained were dissolved in carbol saline and made up to the volume of the original toxin Each diluted 1 in 2000 was then tested on selected cases, the results being —

	Positive	Negative
Two volume alcohol precipitate—		
Non scarlet	7	2
Scarlet	–	6
Second alcohol precipitate—		
Non scarlet	2	2
Scarlet	–	5

These findings show that toxin is present in both precipitates *Further experience of this method* has shown that more than half of the available toxin comes down with two volumes of alcohol, and that considerably less than half comes down with further addition of alcohol to four volumes The two volume alcohol precipitate is bulky, does not dissolve readily in carbol saline after drying, and shows a considerable amount of insoluble material On the other hand,

group is high. The Schick positive rate we found in a similar group of medical students was 65 per cent. Twenty of the students had a previous history of scarlet fever, and of these 65 per cent were read as positive and 35 per cent as negative. In several of these the history of scarlet fever appeared somewhat indefinite. Seventy five had a negative history of scarlet fever, and in this group there were 76 per cent positive and 24 per cent negative. The percentage of negative reactions is comparable to that obtained with the Schick test in similar individuals who gave no history of diphtheria.

TABLE I.—*Results of Dick Tests on 95 Medical Students*

Reading	Approximate percentage	Results	Approximate percentage
+	64	–	20
+*	0	–(?)	1
p+	8	–*	
p+*	1	–*(?)	3
+(?)	1		
Percentage positive 74		Percentage negative 26	

Explanation of signs in Tables + = Positive +* = Pseudo and positive p+ = Partial positive p+* = Pseudo and partial positive – = Negative –* = Pseudo and negative (?) = A reaction difficult to interpret

In this series we noted the size of the reaction in relation to the history of scarlet fever. From previous observations on young children the opinion had been formed that the standard reaction with the test dose of toxin, in a completely non immune individual should be about 30 × 20 mm. Amongst the 70 students with positive reactions we found 30 in whom larger reactions developed, and in three the reactions measured upwards of 70 mm in one axis. In all cases the area of redness rapidly disappeared. There were no definite pseudo reactions among the 30 individuals who had reactions larger than the normal. *The size of the positive reaction appeared to have no relation to the history of scarlet fever.* In a few cases only was the reaction greater in area at the end of 48 hours than at the end of 24 hours and in no case did we read a reaction as definitely negative at the end of 24 hours but as positive at the end of 48 hours. In the whole series of normal individuals pseudo reactions were uncommon. Only one pseudo and partial positive, and five pseudo and negative reactions occurred.

Convalescent Group

The second group of individuals tested consisted of 120 cases of notified scarlet fever from the second to the twelfth week of convalescence. Table II gives the results of the tests in relation to the period of convalescence.

TABLE II.—*Analysis of Results of Dick Tests in Relation to Period of Convalescence (120 Cases)*

Week	Positive group (22 or 18 per cent.)				Negative group (98 or 82 per cent.)			Totals
	+	+*	p+	p+*	–	–*	–(?)	
1st								
2nd					1			1
3rd	2		2		19	1		24
4th	4		1	1	18			24
5th					11			11
6th	3	1	2		19		1	26
7th	1		1		14	1	1	18
8th							1	3
9th	1							1
10th					3			3
11th					2		1	3
12th	1				1			2
Totals	12	1	6	3	88	4	6	120

The net results of the tests on scarlet fever convalescents from the second week of convalescence onwards were as follows. Positive group 18 per cent, negative group 82 per cent, the partially positive group amounted to 7.5 per cent. Table III gives a further analysis of the positive group.

TABLE III.—*Further Analysis of Positive Group in Table II in Relation to Clinical Diagnosis of Scarlet Fever (22 Cases)*

Clin diag of scarlet fever	Number tested	Result of Dick test	Clin diag of scarlet fever	Number tested	Result of Dick test
Definite	14	+	Doubtful	5	+ 4
		+* 1			p+ 1
		p+ 5	Very doubtful	3	+ 3
		p+* 3			

Of the 22 read in the positive group 14 had a very definite clinical history of scarlet fever and the remainder were considered from their history and continuous observation during their convalescence to be of "doubtful" character. Of the 14 with a definite history of scarlet fever six only gave strongly positive reactions, one of these being a strong positive and pseudo reaction. The remaining eight gave partial positive reactions. In the case of the six strongly positive cases the intervals after the alleged onset of the disease were 4, 5, 5, 6, 6, and 7 weeks respectively. One of the strongly positive patients with a history of a very definite attack developed a typical attack of scarlet fever the day after the test had been read. This case illustrates the possible value of the test in investigating the confused subject of relapses in scarlet fever.

As it is generally admitted that the diagnosis of scarlet fever is much more difficult in very young children, an analysis of the reactions was made in reference to age groups. The numbers of the children under four years old were too small to enable us to draw any definite conclusion from them, but there was some indication that positive reactions were relatively more common in this group. Pseudo reactions, either positive or negative, were unexpectedly uncommon in the group of convalescents. From previous work it seemed that pseudo reactions are more common during the more acute stages of the disease.

Hospital Staff Results.—Thirteen members of the medical and nursing staffs of scarlet fever wards were also tested. All but one nurse had spent a considerable time attending scarlet fever cases and seven had suffered from definite attacks of scarlet fever. This nurse had been in the wards only a *fortnight* and was the only one to give a positive reaction. Nine days after the test she developed a typical attack of scarlet fever.

Discussion of Results

In both groups it will be seen that an individual with a history of scarlet fever does not necessarily give a negative reaction, even though several weeks have elapsed from the onset of the attack. The normal group with a history of scarlet fever had a Dick positive rate of 65 per cent and the convalescent group 18 per cent. The Dick positive rate in the normal group with a scarlet fever history was therefore undoubtedly high. Two explanations of this unexpected finding are suggested. Either the history given by the individual himself was unreliable, or the immunity to the toxin had disappeared with the lapse of time. It seems, however reasonably certain that the risk of scarlet fever, to those with a definite history of the disease is small, and on these results the possibility of individuals being Dick-positive yet insusceptible to the disease cannot be excluded.

A similar difficulty occurs in interpreting the results in the convalescent group, where there was a Dick positive rate of 18 per cent. Four explanations of this discrepancy appear possible (*a*) That the present methods of diagnosis are not wholly satisfactory, (*b*) that patients who have had scarlet fever do not

of the chronicity of the irritation, there is not wanting evidence to suggest that under certain conditions the single application of a carcinogenic agent may give rise to cancer. Evidence in support of this view is partly clinical, partly experimental.

Clinical Records.

Story (1885)[1] cites the case of a carbolic worker who received a splash of crude carbolic on the conjunctival surface of the left lower eyelid. Four months later an epithelioma was removed at operation from the area which had been touched by the carbolic. The diagnosis was confirmed by microscopical examination.

Bang (1923)[2] records the case of a tar worker who while opening the door of a retort was splashed by a bead of hot tar, which fell on the skin just within the left nostril. Sixteen days later an epithelioma the size of a coffee bean was removed at operation from the area which had undergone the trauma.

In both these cases the single application of an irritant was followed by the occurrence of a carcinoma. It is probable that records of similar cases, though by no means common, are to be found in the literature. There are, of course, many cases where injury to a limb is followed sooner or later by the recognition of a malignant growth, usually a sarcoma, at the site of injury. The difficult question always arises, however, as to whether the trauma has not simply served to draw attention to a previously existing neoplasm. In the two cases here cited this difficulty does not arise. It may, however, be objected that both patients had worked for some years with carcinogenic agents. It is possible, though not probable, that the areas on which the epitheliomata developed may have been subjected to prolonged irritation.

Experimental Results.

To obviate this criticism it was determined to try the effect of a single application of hot tar to the skin of mice. The following experiments were therefore carried out:—

Feb. 20th, 1924: Fifty mice received one application of a chloroform extract of tar heated to a temperature of 70° C. on the depilated skin of the back.

April 11th: Twenty-five mice received one application of the same tar heated to 70° C., the tar being applied to three small areas forming the apices of a triangle on the back of the mice.

Feb. 4th, 1925: Thirteen mice were still alive. Two mice from the first and one from the second series had developed epitheliomata on the skin of the back. The three tumours exhibited continuous growth, and in their naked-eye and microscopic appearances resembled in every way the epitheliomata produced by the long-continued application of tar.

These experimental results serve, therefore, to confirm the clinical cases previously cited by showing that the action of carcinogenic agents on the cell is mediate rather than immediate. By the law of probability it is far more difficult to obtain a given result by a single attempt than by repeated attempts. As, however, our knowledge of the essential cell changes involved in cancer development becomes more advanced it should be possible to produce cancer invariably by a single intervention.

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[1] Story, J. B. (1885): Trans. Acad. Med. in Ireland, iii., 322.
[2] Bang, F. (1923): Bull. du Cancer, xii., 184.

FINANCES OF UNIVERSITY COLLEGE HOSPITAL.—Last year's accounts of this hospital show a deficit of £11,500, which brings the total deficit for the last six years up to £15,000.

ROYAL HALIFAX INFIRMARY.—A new maternity ward at the Halifax Infirmary was opened recently by Princess Mary, Viscountess Lascelles. The ward, named the Linford Moore Kitchenman Maternity Ward, has been erected as the result of a legacy of £5000 by the late Mr. Charles Kitchenman of Halifax, and other donations include £2000 from Mr. Frank Lee, President of the infirmary, and £1000 each from Sir William Bulmer and Sir Harold Mackintosh. The ward will accommodate 20 patients.

Medical Societies.

HARVEIAN SOCIETY OF LONDON.

A MEETING of this Society was held on March 27th, Sir JOHN BROADBENT, the President, being in the chair.

Sir CRISP ENGLISH opened a discussion on

OBSTRUCTION OF THE COLON.

He said that the subject was one which teemed with difficulties and the results of treatment were at present deplorable, having an operative mortality of 30-40 per cent. Excluding, for the purpose of this discussion, intussusception, external herniæ, and intestinal stasis, the remaining cases of obstruction were due in 80 or 90 per cent. of cases to malignant disease, 85 per cent. were on the left side and 50 per cent. in the pelvic colon; 35 per cent. of the cases were acute.

Diagnosis.

The diagnosis must rest on a careful study of early symptoms, which were often so slight that they failed to impress the doctor. There was little hope of improvement until the profession had learned the doctrine of early diagnosis, but to endeavour to teach it to the public would only result in a great increase of neurasthenia. The problem was essentially a suitable one for treatment by modern clinical methods, calling for every type of investigation available. The experienced observer was able to detect a characteristic facial aspect in the patient, or attention might be drawn to the case by the appearance, for the first time, of abdominal discomfort and constipation in elderly subjects. Often there was very little pain, but some localised borborygmi were noticed and a feeling of trickling in the neighbourhood of the growth. But there was no symptomatology of carcinoma of the colon until the onset of some degree of obstruction. The keynote to this was the distension and hardness of the cæcum. Diagnosis and localisation must rest to a large extent on the X ray findings, which should be based on a barium enema, supplemented by a barium meal and observations under the screen as well as photographs. Frequently barium meals and enemata were much too bulky, producing an exaggerated and distorted picture or a confusing mass of shadow. Sometimes an enema would pass right through a carcinoma, and radiological evidence must be taken in conjunction with the clinical signs and symptoms. Gas in the colon would at times serve to show the site of a partial obstruction without the presence of any opaque substance. Sigmoidoscope examination was also helpful.

The present high mortality might be attributed to three factors: (1) Delay, whereby the patient came to operation in a condition of profound toxæmia. (2) Attempting too much; there was often confusion between relief and removal of the cause. In acute cases relief only must be considered and cure postponed. (3) Anæsthetic. As much as possible should be done under local or spinal anæsthesia. A heavy general anæsthetic greatly reduced the patient's chances in an acute case.

The only practicable operation in desperately toxæmic cases was a blind cæcostomy, and this was the measure of election in all acute cases unless there were some definite indication for a colotomy. It had the advantages of being rapid and could be done under local anæsthesia with a small incision. It was fatal to allow distended coils of intestine to get outside the abdomen as they could never be replaced. Exploratory laparotomy should only be performed when there was no appreciable distension. If the pulse were more than 140 it was futile to operate at all. Whatever operation was undertaken, it was advisable to do a cæcostomy as a temporary measure

dose of it was liable to lead to griping pains in the lower abdomen which had never before been experienced.

Reply

Sir CRISP ENGLISH, in replying, said that the great need was to find some way of reducing the mortality under present methods. It was to this end that he had adopted cæcostomy. Volvulus occurred in 1.5 *per cent. of cases only, and if the 1.5 per cent.* were catered for by exploration there would be a loss of some 10 or 20 per cent. of other types of case. He thought that anastomoses should be drained although it did produce fæcal fistula; better a live patient with a fistula than a dead one without.

MEDICAL SOCIETY FOR THE STUDY OF VENEREAL DISEASES

GONOCOCCAL AND SYPHILITIC AFFECTIONS OF THE EYE

A MEETING of this Society was held on March 27th, Colonel L. W. HARRISON, the President, being in the chair. The evening was devoted to a discussion on the above subject.

Syphilitic Eye Conditions

Mr N. BISHOP HARMAN dealt with the eye conditions due to syphilis and, owing to the varied extent of these eye affections due to that disease, he said he would take as his main thesis, syphilis as a cause of blindness, blindness being the bill of mortality of that important organ. He would be *able to show, he said, that syphilis was accountable* for more blindness than was any other single infection or degeneration of the eyes. The material on which this contribution was based came from three sources: (1) A well known home for blind babies; (2) several schools for the blind established by the London County Council; and (3) cases from his private practice, a total of well over 5000.

Mr Harman had examined 200 blind infants, mostly at about a year old. When admitted to the home they remained there until their fifth year, and were then transferred to other blind schools. In these infants there were three causes of blindness: Surface inflammations, inflammations within the eyeball, and congenital defects. More than half these cases belonged to the first group, ophthalmia neonatorum being the chief contributor—40 per cent. of the cases; purulent conjunctivitis due to acute infectious diseases yielding 8 per cent. In the second group the prime cause seemed to be congenital syphilis. The third group embraced congenital defects of the eyes, mostly due to lack of development or to a pathological arrest of development, some of them syphilitic. At least 60 per cent. of these babies owed their blindness to parental venereal disease (50 per cent. from gonorrhœa, 10 per cent. from syphilis).

Blind School Children

The school children examined by Mr Harman numbered 3300, and he had classified them for two special purposes, with an interval of seven years between—namely, for submission to the Royal Commission on Venereal Diseases, and to the Departmental Committee on the Causes and Prevention of Blindness. More than half the infants were blinded by *ophthalmia neonatorum*. With regard to the surface inflammations, 699 of the children were blinded in this way. Total blindness was caused by ophthalmia neonatorum in 369, *purulent conjunctivitis* of later years in 90, and phlyctenular keratitis in 242. Children blinded by inflammation in the front half of the eye numbered 413, chiefly due to interstitial keratitis, an effect of congenital syphilis. Iritis and irido-cyclitis accounted for 14, syphilis being responsible for all but two of them. Of 242 cases of disseminated choroiditis, 210 were certainly attributable to congenital syphilis. Summarised, the figures showed that venereal disease in parents accounted for more than half the blindness found amongst school children—i.e., children between 7 and 16 years of age.

Patients of All Ages

Dealing next with the third source of his material, private practice, he said that of 5000 cases he had examined, *of all ages, 925 were blind in one eye or* in both while 603 were partly blind on one or both sides. Ophthalmia neonatorum accounted in this group for only 17, and only one adult had gonorrhœal ophthalmia. At all ages, including the young and the very old, blindness from venereal disease was about 14 per cent. of the whole—i.e., 2.5 per cent. from gonorrhœa and the rest from syphilis. Viewing *the matter from another angle, that of the results* of measures taken to reduce blindness and other sequelæ of venereal disease, he gave the number of blind children per 100,000 school children in 1907 to 1913, and again in the years 1914 to 1920. In the former period the percentage of ophthalmia neonatorum was 18.3, that of congenital syphilis 16.8. The comparative figures for the later years were 12.5 *and* 40.2 respectively, showing 6 per cent. reduction in each class.

He next dealt with the clinical signs of syphilis, remarking that in school work the diagnosis of congenital syphilis must rest largely on associated symptoms. In 100 cases of interstitial keratitis due to congenital syphilis he found Hutchinsonian teeth were present in 129, the characteristic physiognomy in 73, iritis in 77, disseminated choroiditis in 30, and 72 had a bad family history. Of 51 cases with disseminated choroiditis, 22 became insane, 18 were *mentally deficient*, 2 were *microcephalic idiots, and* 9 epileptic.

Mr Harman proceeded to deal with the serious effects of syphilis on the results of pregnancy, and his remarks led up to his exhibition of the following *instructive table*:—

—	*Healthy children*	*Mis-carriages*	*Still-born*	*Infant deaths*	*Diseased with syphilis*
Syphilitic	399	92	80	229	210
Average	91.7	73.8	0.3	113.8	—

Syphilitic mothers had 17 per cent. more pregnancies than did "average" mothers, probably because of the *frequency of miscarriages among them*.

In conclusion, he expressed his appreciation of the earnest work which was now being carried on in the V.D. clinics of the country, and said that eye and other specialists looked hopefully to the workers in *those centres for a* substantial reduction of these tragedies of life.

Gonorrhœal Affections of the Eye

This part of the subject was dealt with by Mr CYRIL HUDSON. He considered the infections under the headings of exogenous and endogenous, and said that gonococcal infection of the conjunctiva might occur not only before birth but before rupture of the membranes took place. The nurses controlled by the Central Midwives Board were not allowed to use more elaborate measures for preventing ophthalmia neonatorum than wiping the eyes of the infant free from all moisture as soon as the head was born. Credé, by wiping the eyes with clean linen and ordinary water, and then allowing a drop of 2 per cent. silver nitrate to fall off a glass rod into the eye, reduced his cases of this condition from 10 per cent. to under 0.5 per cent. But the time of greatest danger to the eyes of these infants was *immediately* after rather than during birth, as there was then risk of infection of the eyes from the baby's hands they were washed, and from the bath water the eyes, and precautions must be taken

exhaustive. The procedures which the surgeon may be called upon to perform in this difficult region are complicated, but admirable illustrations illuminate the section, and even a student should have no difficulty in following the descriptions. Operations on the skull and brain are dealt with by Mr. Bathe Rawling with sound common sense. Particularly good are the pages he devotes to gunshot wounds of the skull. The actual technique of the operations he describes could, as he says, be carried out by any experienced surgeon, though we hardly agree that they can safely be undertaken by a surgeon who has not special experience of such work. Indeed, so difficult are the decisions which have to be made at the operating table that some hold the view that removal of a cerebral tumour should only be attempted in the presence of at least two first-class opinions in consultation at the actual operation. Mr. Gillies deals with plastic surgery, supplying an inspiring epitome of the subject from the most modern standpoint. The article teems with new and practical ideas, and the author might in some places, we think, justly have claimed personal credit to which he lays no claim.

To Mr. Carson, the editor, falls the task of dealing with abdominal operations, and he performs it in a series of admirable articles. The task of selecting a series of representative operations must have presented great difficulties. The successful compression of these into so small a space without the loss of any important detail is a great feat. In the article on gastric ulcers the orthodox practice of the present day is explained, described, and illustrated with great clearness. It is refreshing to read an article on this subject in which the author does not lose himself in a maze of alternative methods, but describes a selected group of operations with the detail they deserve. Sir John Thomson-Walker and Mr. John Everidge are responsible for the articles on genito-urinary surgery. Many new methods are described, and the sections are well up to the high standard of the book.

A series of articles on special subjects forms a very valuable addition to the work, being a recognition that many surgeons have to undertake a much wider range of surgery than specialists in great centres are called upon to consider. These sections are sufficiently advanced to appeal to the specialist, while clear enough to help the general surgeon called on to do an operation well outside his usual range. The short space devoted to anæsthetics is taken up by Dr. J. Blomfield with a sound account of the methods of general anæsthesia, full of valuable hints. Only two-thirds of a page is devoted to local anæsthesia; it is likely that this space will have to be largely increased in a future edition, for infiltration anæsthesia will surely hold an important place in the future of surgery.

This work may be taken as representative of the established practice of English surgery at the present day. Its production is a really fine achievement.

CLINICAL RESEARCHES IN ACUTE ABDOMINAL DISEASE.

By ZACHARY COPE, B.A., M.D., M.S. Lond., F.R.C.S. Eng., Senior Surgeon to Out-patients, St. Mary's Hospital, Paddington; Senior Surgeon to the Bolingbroke Hospital, Wandsworth Common. London: Oxford University Press. 1925. Pp. 148. 12*s.* 6*d.*

IN this volume the author has collected together a series of articles which he has contributed from time to time to various journals. They all centre round his own clinical observations, and it is a feature of these observations that they have been made without instrumental or laboratory aid of any kind. The book is, in fact, a protest against the undue stress apt to be laid at the present time on complicated methods of laboratory technique, and a plea for a return to the simple and direct observations upon which our fathers had to depend for diagnosis, and in which they developed such amazing skill. Practically every chapter discusses from some point of view the interpretation of pain as a symptom of disease, and none will dispute the clinical importance of this aspect of medicine. In addition to collating the observations of Head, Sherren, and many others, Mr. Cope describes several valuable tests of his own invention, such as the obturator and femoral tests, which have now passed into general use. Numerous descriptions of cases illustrate his ideas, and the sequence which he cites in order to establish his theory regarding phrenic shoulder pains is of real interest. The book is full of suggestive ideas, and not the least part of its value lies in its appeal to the clinician to use his hands and eyes.

ENDOCRINOLOGY.

Goiter. Nonsurgical Types and Treatment. By ISRAEL BRAM, M.D. New York: The Macmillan Company. 1924. Pp. 479. 31*s.* 6*d.*

Les maladies des glandes endocrines. By Prof. KNUD H. KRABBE. With a preface by Dr. STEPHEN-CHAUVET. Paris: Libraire Le François. 1925. Pp. 91. Fr.10.

THE American author, in a book entitled "Goiter," has some definite object in view other than to assemble all the known facts on the thyroid gland and its disorders. The subtitle of Dr. Bram's book gives the clue to what this object is, and the book consists for the most part of an elaborate plea against surgical interference in cases of exophthalmic goitre. An attempt is made to classify these non-surgical goitres on a rough pathological basis as the unencapsulated varieties of thyroid swellings, but the real classification adopted by the author is what he calls a therapeutic one. If an enlargement of the thyroid gland and the consequent disorder of the human economy can be cured by correct non-surgical procedures, then that type of enlargement is a "nonsurgical" one. Dr. Bram will only allow the surgeon to interfere in Graves's disease if there are marked pressure signs, if there are malignant changes in the gland, or if any septic focus requires eradication. His description of the treatment and general management occupies nearly half the book, and while there is no doubt tha exophthalmic goitre will frequently yield to the strict régime, the carefully selected diet, the medicinal, local, and psycho-therapeutic treatment as here described, the cure may be tedious and uncertain.

In Prof. Krabbe's book on the internal secretions this very point is emphasised, for he holds that surgical treatment of exophthalmic goitre is definitely indicated "if the patient cannot afford the cost of a long treatment which necessitates cessation of his occupation." Prof. Krabbe's book has the great merit, somewhat uncommon in books on this subject, of being short. In less than 100 pages the whole of what is now termed "endocrinology" is rapidly surveyed. Numerous excellent photographs of patients illustrate the classical types of disorders of the internal secretions, and each ductless gland is dealt with in turn with reference to pathology, symptomatology, and treatment. Of the two authors Prof. Krabbe had probably the more difficult task; his greater success is therefore the more creditable.

THE BLOOD.

A Guide to its Examination and to the Diagnosis and Treatment of its Diseases. Third edition. By G. LOVELL GULLAND, C.M.G., M.D., F.R.C.P.E., *Professor of Medicine and Clinical Medicine* in the University of Edinburgh; and ALEXANDER GOODALL, Assistant Physician in the Royal Infirmary, Edinburgh. Edinburgh: W. Green and Son, Ltd. 1925. Pp. 424. 25*s.*

FOR the past 12 years this work has occupied a proud position in this country as a standard text-book upon diseases of the blood, and there is every to believe that it will continue so to do. T edition follows closely upon the lines of t

list School, founded in mediæval times by William of Occam, who first clearly recognised the distinction between the "conceptual" as opposed to the "realist" and "nominalist" views, in respect of *universals and classes, and names given to them* This line of thought has never been without representation in English philosophy, and has been carried on, through Hobbes, Locke, Hume, and Bentham, down to to day It is now permeating science and has been ably expounded by Vaihinger, in "The Philosophy of As If"

But the authors of "The Meaning of Meaning" have attempted to cut a way through the mazes of metaphysical and logical discussion by giving, more fully than has yet been attempted, adequate attention to what they call a theory of symbols Verbal symbols—words and phrases—stand for them as labels, as means of identification for the thoughts that, in this context are called references The thoughts or references have, as basis, signs, or what is thought about, and these signs are called referents While in the simplest mental processes referents are single signs or groups of such signs, or sense experiences, thoughts themselves may in process of higher interpretations become referents Incidentally, so long as we distinguish between our symbols, *our references, and our referents, it is, for the* moment, quite unnecessary and irrelevant to bother about theories of reality, and we can, if we please, adopt the authors' method of thought and expression with equal convenience and advantage whether we be *materialists of the most common sensical variety* or idealists of any school—Berkeleyan, Kantian, or Hegelian Illustration of the applicability of the principles to medical discussion is given by Dr Crookshank in his appendix to "The Meaning of Meaning," *wherein he attacks anew the problems raised by the* recent recognition of encephalitis lethargica as an entity *sui generis*, distinct from polioencephalitis and poliomyelitis. According to Mr Ogden and Mr Richards, our "cases" are our referents, which when accurately observed should *form the* "material of our references, or disease concepts, whilst these concepts, if adequately constructed, should, when correctly symbolised or named, yield that economy in *thought which Mach held to be the object of all* science Thus we are furnished with rules for our better deportment in expression, and for correct symbolisation, so that we should not fall readily into the error of confounding our references and our referents our symbols and our references—that is to say, our thoughts with what we observe, and our names with our thoughts and with objective or subjective things"

The Theory of Symbols is indeed, very completely worked out, and a Theory of Signs outlined in some detail in a work whose implications are far reaching Not every chapter therein is easy reading, but every chapter contains much that is valuable, and a good deal that is amusing, while the whole lesson will be of high utility to all who desire to steer clear of the fallacies that attend the communication of thoughts to others—fallacies which have led to lack of economy in scientific and literary endeavour as well as to profound misunderstandings and thus become heavy obstacles in the path of human progress

JOURNALS

BIOCHEMICAL JOURNAL Vol XIX, No 1, 1925 Among the contributions to this issue are the following G Hunter writes on the Diazo Reaction in Urine The subject is approached from an historical standpoint and Ehrlich's reaction is analysed The reagent favoured by the author is that of Koessler and Hanke An attempt is made to systematise the different types of diazo reaction in normal and pathological urines The Ehrlich diazo reaction in acid solution is merely referred to as there has never been any question of its specificity for bilirubin in biological fluids The diazo reaction in alkaline solution has been divided into two types, A and B Type A reaction is characterised by a gradual development of colour until a relatively stable maximum *is reached Type B reaction is given by an immediate* development and rapid disappearance of colours All urines give some form of Type A reaction Type B is given only by pathological urine, especially from typhoid and measles The substance responsible *for Type B reaction is unidentified, but suggestions* as to its probable nature are given —The Presence of Vitamin A in Yeast Fat is discussed by E M Luce and I Smedley MacLean Several dieting experiments were performed on rats The results are discussed at length, three charts showing various stages of growth are given, and the possibility of synthesis of vitamin A by the yeast cell is not lost sight of —T M Henderson contributes an article on the Effect of Irradiation and Diet on Calcium and Phosphorus Metabolism One hour's irradiation daily for 21 days with a carbon arc lamp definitely increased the calcium and phosphorus retention in a pig on a badly balanced diet as compared with a control kept in the dark Both Ca and P in the urine rose following on irradiation, there was no concomitant increase in body weight In pigs fed on a satisfactory diet well balanced particularly with respect to Ca and (P_2O_5 CaO = 1 1) darkness or irradiation had very little effect on Ca and P retention Analyses of the bones were in general agreement with the findings of the metabolic analyses —The Bactericidal Action of the Blood in Certain Dietary Deficiencies is the title of a paper by G M Findlay and I Smedley MacLean They attempt to determine the effects of diets deficient in vitamins and certain other essential factors on the bactericidal power of whole blood Experi*ments* were made with rats and the bactericidal power of whole blood for *Staphylococcus aureus* was investigated when the following conclusions were arrived at The blood of normal rats, tested against *Staphylococcus aureus*, showed a killing power of 70 *per cent* The blood of rats fed on a diet deficient in vitamin A and the antirachitic factor showed a reduction in killing power only after the onset of keratomalacia or some other infection In rats fed on a diet deficient in vitamin A and the antirachitic *factor* but exposed to ultra violet light, the onset of bacterial infection and the reduction in the killing power of the blood were delayed Rats suffering from keratomalacia as a result of a diet deficient in vitamin A continued to show a low bactericidal power *of the blood* after exposure to ultra violet light Rats fed on a diet lacking phosphorus and the antirachitic factor showed in most cases a reduction of the bactericidal power of the blood Rats fed on a diet lacking vitamin B showed a reduction in the killing power of the blood —In an article entitled the Early Action of Insulin on Diabetes, L Lawn and C G L Wolf attempt to throw some light on the effect of insulin upon carbohydrate metabolism Details of four cases are given and the authors offer the suggestion that the first action of insulin is to convert glucose into glycogen, and as soon as a reasonable demand of the tissues for this substance is satisfied the insulin enables the organism to mobilise and burn the glycogen in the usual way —A Chemical Study of Defective Ossification in Rachitic Animals, by R Robinson and K M Soames In this paper the chemical aspects of the cause and nature of rickets are studied Numerous dieting experiments were carried out on rats, tables showing Ca and P in diets and acid soluble P in whole blood are given as well as bone analyses, results tend to show that the defective calcification of the skeleton resulting from inefficient diets is probably not due to any deficiency of inorganic phosphate or of the specific phosphoric ester in the blood, or of the enzymes in the bone by which the ester is hydrolysed The view is held that the defective calcification is mainly due to a deficiency of inorganic phosphate ions, while this is not the case when the defect is caused by a lack of the fat soluble factor alone

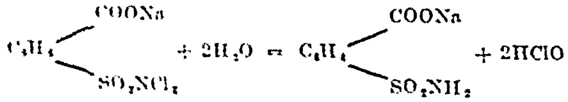
Cambridge University Medical Society Magazine. Vol. II., No. 2.—This magazine maintains its high level, and much of the present contents is interesting to other than local readers, who are the only readers who can be expected to appreciate the lighter side of the production. Mr. Vernon Pennell's essay on chronic iliac pain and Sir William Willcox's notes on fatal poisoning may be mentioned for their clinical value, while to that increasing group of medical men who are interested in the ancient story of their profession, Dr. W. H. L. Duckworth's note on Harvey's MS. Prelectiones will be very interesting. Once again we have proof of the real sterility of the intellectual world during the *Dark Ages*. *Dr. Duckworth* shows in his survey of Harvey's quotations and references that for the most part the great pioneer's sources of information as to work accomplished previously, and as to opinions published by his predecessors, were twofold—namely, the writers of antiquity and those of the sixteenth century. Between these is silence.

Reports and Analytical Records.

PANTOSEPT TABLETS.

(Manufactured by Chemische Fabrik Ehrenstein.
Sole Distributors: Barton Trading Co., Ltd.,
4, Dean Stanley-street, Westminster.)

The value of Dakin's solution—which is essentially a mixture of boric acid and bleaching powder—is well known to medical practitioners, but it has the disadvantage of requiring special preparation. Many attempts have been made to produce hypochlorous acid for medical purposes in a form which is stable, and this has apparently been effected by Prof. M. Claasz of Munich. He has found that the sodium salt of dichlorylsulphamido benzoic acid when dissolved in water decomposes as follows:—



$$C_6H_4(COONa)(SO_2NCl_2) + 2H_2O = C_6H_4(COONa)(SO_2NH_2) + 2HClO$$

combination, suitable for intra-glandular injection and inunction. Its therapeutic application is based upon its iodine content and penetrative power, and extended clinical trials have yielded evidence indicating its usefulness and justifying its introduction to the medical profession. It can be employed as an injection in rheumatoid arthritis and in the treatment of tuberculous and scrofulous glands, and has been administered in epilepsy. As an inunction successful clinical results have followed its use, again, in rheumatoid arthritis and in simple goitre; and, in view of its iodine content, its further trial is suggested in sprains, neuritis, and some skin affections such as *eczema, psoriasis, ringworm, and erysipelas. Ethidol* does not stain or cause local irritation. It may be heated to 100° C. before injection, which appears to be attended with no discomfort. Injections are stated not to cause induration and are usually painless. The strength can easily be modified as the preparation is miscible with almond or olive oil. It is issued in bottles of 1 oz. and 4 oz.

THE "SOLOID" URINE-SUGAR-TEST CASE.

(Burroughs, Wellcome and Co.)

The above firm has also put upon the market a sugar-test case for the use of diabetics who are under insulin treatment at home. The case is made of stout cardboard and contains a liberal supply of tests, 24 in all. The full contents are as follows: Two tubes of "soloid" alkaline citrate, one tube of "soloid" copper sulphate, one medicine dropper with rubber bulb, two test-tubes graduated, one wire test-tube holder, one small square of asbestos, one bottle of 25 "soloid" hexamethylenetetramine, and one of these placed on the asbestos square will burn for three minutes, sufficiently long to conduct one test. The test is very reliable, and amounts as low as 0·1 per cent. of glucose are read with ease. The introduction of a simple heating medium, obviating the employment of methylated spirit, is a feature which will be readily appreciated. The flame is smokeless and therefore there is no tendency for the reading to become obscured. The case is compact, measuring 5 in. × 4¼ in. × 1⅛ in., and may easily be carried in the pocket. The price is 5s. 5d.

Note on the use of Dimol
in
SURGERY

In view of the experience of a large number of observers who have found that the growth of gas-producing organisms which cause severe pain after abdominal operations may be effectively controlled by the use of Dimol, *a distinguished surgeon has suggested* that its free administration, both before and after the operation, would obviate the discomfort and pain which only too often follow such surgical measures.

As the experience of surgeons has proved that flatulence, if not controlled, may even imperil life, the above procedure should be worthy of serious consideration.

Literature and Samples may be obtained from

THE ANGLO-FRENCH DRUG CO., Ltd., 238a Gray's Inn Road, London, W.C.1.

Cables and Telegrams: "Ampsalvas, London." Telephone: Museum [illegible]

Products of Note

'Alkagen'

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An effective Antacid and Carminative for Hyperacidity and Flatulence. 'Alkagen' is an efficient and pleasant preparation possessing the antacid properties of magnesium hydrate with the carminative action of oil of peppermint. It provides a neutralising agent which is easily disintegrated, sufficiently soluble and prompt in effect, whilst unlike preparations of the alkaline carbonates or bicarbonates, it does not cause the evolution of carbon dioxide in the stomach.

'Alkagen' Tablets. In bottles of 60, 120, 250 and 500.

'Alkagen' Lozenges possess an agreeable, mild peppermint flavour; they are particularly suitable for the relief of flatulence or the 'biliousness' of children.

Issued in boxes containing 36 and 108 lozenges.

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TRADE MARK

Tablets

A powerful Urinary Antiseptic. 'Cystazol' is a combination of Hexamine with Sodium Benzoate: its action depends on the liberation of formaldehyde from the decomposition of the hexamine that takes place in the urine which has been rendered acid by the sodium benzoate moiety. 'Cystazol' is employed with advantage in cystitis, bacilluria of all types, pellagra, gonorrhœa and septic conditions of the urinary tract generally. It is also of special value as a prophylactic against local infection before and after operations on the genito-urinary system.

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(Shadow Meal)

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'Umbrose' No. 2 ,, 4 oz. ,,
'Umbrose' No. 3 ,, 6 oz. ,,

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See also pp. 27 & 38.

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See also pp. 27 & 38.

THE LANCET.

LONDON: SATURDAY, APRIL 4, 1925.

THE PENALTIES ON PANEL DOCTORS.

THE Panel Committee for the County of London recently reported adversely to the Ministry of Health on the medical conduct of a panel practitioner, and accordingly the Inquiry Committee appointed for the purpose by the Minister of Health investigated the circumstances, with the result that the charge of gross negligence, formulated by the Panel Committee, was considered to have wholly failed. The Inquiry Committee added that as the Panel Committee had not been justified in making the representation and in putting in motion the machinery, they would have to pay to the practitioner his taxed costs of the inquiry, while it was resolved not to remove the name of the practitioner from the medical list. At the same time, however, the Inquiry Committee agreed with the recommendation of the Panel Committee that a substantial reduction should be made from the practitioner's remuneration, in accordance with which the sum of £20 has been, or will be, withheld by the Minister of Health from the money payable to the Committee in respect of medical benefit, which sum will be recovered from the practitioner. Other cases dealt with by the Inquiry Committee resulted in the censure of a practitioner for the irregular charging of fees for drugs to an insured person, and in the acquittal of a practitioner for gross negligence in failing to pay certain visits to a case of appendicitis. But in this case, as in the case first referred to, the acquittal of the charge of gross negligence was qualified by a fine of £10 for failure to provide a proper standard of medical treatment; while other practitioners, concerning whose conduct of their work complaints had been made, were fined small sums for not complying with certain terms of the service, for not keeping proper records, or for irregular acceptation of fees.

These proceedings have aroused considerable interest in the panel service who, to a man, bear in mind the case of a monstrous fine recently inflicted in analogous circumstances, and the feeling is becoming widespread that the powers of the Ministry of Health in dealing with accusations against panel practitioners are improperly arbitrary. It is not difficult to see how these powers, which are not only unprecedented but were never contemplated when the National Health Insurance Act was passed, have come into being. The Minister of Health is responsible to Parliament for seeing that insured persons get their rightful benefits under the Insurance Act, and accordingly has to see that the insurance practitioners carry out their contracts. Therefore, he must have some punitive discretion, and it will be admitted that, to prevent the occurrence of illegalities or abuses, penalties constitute a reasonable procedure. But a procedure which is reasonable in concept may in practice become the reverse, and it is difficult to understand on what grounds practitioners can be fined by a tribunal which holds that the indictments were incorrect; while it is comic, though the results may be tragic, that there should be no limit apparently to the fines that may be demanded. In our Parliamentary report this week will be found an interrogation put to the Minister of Health, inspired by two of the cases alluded to above, but having a general bearing on the whole matter. The Minister of Health explained the action of his Department on the ground that, while gross negligence was not established in either case, failure to exercise reasonable care in one of them and to visit at a critical period in the other, were indicated. This is a perfectly straightforward reply, and it is no reproach to the Minister that it will not be found sufficient. The Minister of Health cannot and does not attempt to prescribe the medical treatment which should be given, and which, we presume, must be settled by the professional standards which hold good for the area in which the medical man practises. The practitioner who acts in any circumstances "to the best of his knowledge and belief" should not be penalised. Here we would remind those who are most critical of the valuable services rendered to the country by insurance practitioners that, when they assume modern methods of diagnosis as essential to a correct diagnosis, they are ill-informed, and may in many respects be belittling the whole of clinical practice. These are the persons who initiate the actions for malpraxis or negligence brought against medical practitioners, where, whatever the verdict, pecuniary and professional damage to the doctor and expenditure of money by the complainant are the inevitable results.

But we do not expect the Ministry of Health to react in accordance with what are conceived to be public demands. The Minister of Health has responsibilities towards his officers as well as towards the public, of whom his officers are also a part. The knowledge that disciplinary inquiries will be made upon rightful occasions, and that penalties will be meted out logically in accordance with undisputed findings, encourages those insurance practitioners who need the stimulus to comply with the terms of the service. But the feeling that a man can be penalised when the indictment breaks down, the apprehension that a Committee of Inquiry may not be able to detect when the views of a Panel Committee represent a reasonable estimate of what should be demanded of a practitioner, and any capricious or vindictive fines—these things do not encourage good work.

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RADIUM THERAPY.

THERE has been published this week a clinical index of radium therapy, written by Mr. A. E. HAYWARD PINCH, medical superintendent of the Radium Institute, with the object of bringing to the notice of medical practitioners generally the wide range of diseases covered by this branch of therapeutics. The cost of the publication is being borne by the Committee of the Institute, and the volume is intended for gratuitous distribution to the medical profession. The book is based upon the actual work carried out at the Radium Institute, clinical signs and symptoms are recorded as well as the lines of treatment adopted and the results obtained, and in all cases the evidence has been derived from a study of the patients' case-sheets. Emphasis is laid upon the salient clinical facts by which the different diagnoses were established and in accordance with which the advisability of radium treatment was determined, while little or no attempt has been made to deal with the ætiology and pathology of the diseases concerned, and, similarly, questions of apparatus and technique, exposure, and dosage have been dealt with briefly. But a short introductory chapter sketches the physics of radium, and this must be read carefully if the information put out is to be read with understanding. As during the period which has elapsed since the opening of the Radium Institute in 1911, the annual reports of the medical superintendent have been regularly reviewed in these columns, it follows that much of this clinical index has been brought in detail before our readers on previous occasions, but undoubtedly the collection and collation of this previous work in chapters whose length indicates the relative importance of each subject to the practitioner will be valuable to many readers in whose recollection the serial notices may not be fixed. We congratulate the author upon a valuable compendium, bringing up to date in simple terms our knowledge of radium therapy.

The rationale of radium therapy is based upon the fact that the radium irradiation properly administered upon any living cell produces certain effects, occurring in three phases—namely, increase of cell activity, arrest of cell growth, and degeneration and destruction of the cell. But this fact is supplemented by another—namely, that pathological cells and normal cells respond differently to the action of radium rays, the three phases of transformation being distorted, so that proliferation is more rapidly brought about, activity is more quickly arrested, and degeneration occurs more rapidly. On this point Prof. SIDNEY RUSS,[1] discussing the selective action of the rays in passing through the tissues of the body, has said that the rays exert some degree of selective action upon malignant and normal tissues, it being more than probable that the series of events following irradiation is determined somewhat by the interplay of forces between them. He finds, in fact, "the sequel to tumour irradiation depends not only on the dose which it has received, but on the nature and extent of the reaction of the normal tissues of the host." The chief importance, then, in the treatment of malignant disease by radium is to kill malignant cells with as little damage to the healthy cells of the body as possible, and the main problem of radium therapy is correctly to estimate the dosage and exposure necessary to bring about the death of the pathological cells without damaging normal cells beyond the point of satisfactory repair. Insufficient dosage may bring about only a quick stimulus of what it is proposed to destroy. Too heavy dosage may produce the destruction of what it is necessary to conserve. Mr. HAYWARD PINCH, speaking in very general terms of the fundamental principles of radium therapy in dealing with a malignant growth, advises that every effort should be made to secure as uniform a radiation as possible to all parts of the growth, and considers that it is best to give a maximum dose at the first exposure.

The latter half of the book is taken up with summaries of the use of radium in diseases of the alimentary canal and its accessory glands, the thyroid, thymus, and spleen, and the lymphatic system, with chapters on the results in diseases of the breast, and in gynæcology, urology, dermatology, ophthalmology, laryngology, and rhinology or otology generally. Radium in internal medicine is briefly considered, and the clinical aspects of the work of the research department between May, 1919, and December, 1924, are summarised by Dr. J. C. MOTTRAM, director of the pathological laboratory. An appendix is added by Mr. W. S. ALTON, the Director of the Chemical and Physical Laboratory of the Institute, which deals with the evolution of the present-day technique of preparing radium and radon applicators. This is particularly timely, as a misconception has been disseminated with respect to radium emanation, probably due to the fact that only comparatively recently the term radon has been adopted in accordance with a suggestion made in 1923 by an international committee on chemical elements. The technique of the radium emanation treatment has, no doubt, been modified, but, as Mr. HAYWARD PINCH points out in our correspondence columns, the method has been employed almost since the opening of the Institute, as will be seen by the details supplied in the report of the Institute for 1912. Since this time radium emanation tubes have been placed with increasing frequency in proper hands by the Institute, a procedure which also is followed at the Manchester and District Radium Institute under the supervision of their radiologist. The general conclusion of Mr. ALTON is, that there is no distinction to be made in their therapeutic uses between radium and radium emanation, reference being made to a chart, included in the Clinical Index of Radium Therapy, to show that they are successive members in the disintegration series of the same parent body. Employment of one or the other can therefore be dictated by the various circumstances of the case.

* * *

HOSPITALS AND THE BURDEN OF RATES.

AT the last annual general meeting of the governors of the London Fever Hospital Sir CHARLES STEWART was able to report an improvement in the financial position. This admirable institution nevertheless increased its debt last year, though the debt would have been diminished had the hospital not been burdened with heavy demands for local rates. Sir MACKENZIE CHALMERS, the chairman of the meeting, raised an old, but none the less an exceedingly interesting, point by suggesting that hospitals should claim to be exempted from rates representing expenditure in which they have no interest. It is undeniable that a hospital benefits by expenditure which the local authority incurs over sewerage, the removal of house refuse, and the maintenance and lighting of the adjacent roads. It may also be said to benefit by the potential protection of the police force and the fire brigade. On the other hand, a hospital has no very direct interest in the outlay—however small its proportion—under the Baths and Washhouses Acts or the Public Libraries Acts, or in the major expenditure on education or poor relief, or on the equalisation of London rates which unemployment and the industrial crisis have made so burdensome.

It is easy to ascertain the nature of the expenditure for the payment whereof our rates are levied. Parliament could soon determine which are the items by which a hospital actually and directly benefits. If hospitals were rated in respect of those items alone, their struggle for existence would be much less acute, and the public would be the better served with improved facilities for treatment. Though Sir MACKENZIE CHALMERS's plea is not for the total exemption of hospitals from rates, the fact remains that in many not wholly dissimilar cases exemption is given by law. In addition to county and municipal property, for example, churches, chapels, and certified places of religious worship, lighthouses, drill-halls, and scientific and literary institutions are exempt. The basis of the discrimination is doubtless the rendering of essential public service without commercial considerations of profit or dividend. Nobody alleges that these exempted premises or undertakings are unfairly subsidised at the expense of the general ratepayer. Why should not hospitals of approved service be entitled to some relief? With the assent of all parties Parliament has given agricultural land a 75 per cent. exemption from various rates. The object—and a very proper one—is to preserve our agricultural system from extinction even at the risk of putting private profit in the farmer's pocket. Is not our hospital system worth preserving, where no question of private profit can possibly arise? The case for the London Fever Hospital is strong. Founded as long ago as 1802, it has played its part in freeing London from serious epidemics; it has trained generations of expert fever nurses; and its expenses are necessarily high because it must maintain its resources at full strength to meet emergencies. If it asks for relief from the burden of the rates, a debating point may be made against the request. The hospital prides itself on the facilities it offers to those patients who prefer to contribute towards the cost of their treatment rather than to become inmates of a rate-supported institution. A hospital which exists for those who prefer not to throw themselves upon the charity of the rates is in a dialectical difficulty in soliciting relief from local taxation.

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[1] THE LANCET, 1923, ii., 1314.

Meanwhile, the boot is on the other leg, for the London Fever Hospital as a ratepayer is at present contributing to the cost of running the institutions of the Metropolitan Asylums Board. Local authorities, of course, are hardly in a position to be generous. If they had both the means and the will to relieve a hospital, the legal doctrine of ultra vires and the threat of an auditor's surcharge stand athwart their purpose. Parliament should consider the question. Institutions which play an honourable part in the public health scheme of the country, and which are administered on sound lines and without extravagance, should not be allowed to be crushed out of existence beneath the weight of either local or imperial taxation.

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BRITISH CONGRESS OF OBSTETRICS AND GYNÆCOLOGY.

WE publish elsewhere the detailed information concerning the fifth British Congress of Obstetrics and Gynæcology which will be held in London from April 22nd to 24th inclusive. These gatherings from their inception have endeavoured to promote coöperation in clinical research among obstetricians and gynæcologists in Great Britain and Ireland, and those who know our "Extra Number" dealing with modern methods in abnormal and difficult labour will recognise how many points in diagnosis and in treatment remain matters of opinion, even where general lines of practice are accepted. This is particularly the case with puerperal fever, eclampsia, and dysmenorrhœa, and local committees have been formed by the constituent societies of the Congress, charged with the duty of preparing reports upon one of these subjects yearly, the first being the subject for this year. The result of such coöperative effort, and of the periodical conferences, has been undoubtedly to develop a spirit of unity and a desire to promote serious work, and already many questions have been settled. We may contrast the position to-day with that of some 20 or 25 years ago, when a paralysing discord prevailed, England and Wales, Scotland and Ireland having diverse views, while the same might be said not only of metropolitan and provincial schools, but of schools in the metropolis itself. A far greater unity exists to-day in the development of our midwifery service, and if the things which remain for settlement are numerous every advance in our scientific knowledge adds to the list. There will always be work ahead, and the influence of the impending Congress, like that of its predecessors, will be towards the establishment of views which represent accord between the obstetrical teachers of Great Britain and Ireland.

Annotations.

"Ne quid nimis."

THE USE AND ABUSE OF DRUGS.

IN the middle of last century the doctrine of therapeutic nihilism found its chief exponent in Josef Skoda, a leader of a new school of thought in Vienna, who declared that while we can diagnose and describe disease we dare not expect by any means to cure it. In this country up to the present day the influence of that doctrine persists—diagnosis is taught in our medical schools as the essential equipment of the young practitioner, and the student hears too often that a physician must be judged, not by the success of his treatment, but by the extent of his knowledge, medicine as the art of healing the sick giving place to medicine as the study, per se, of the disease. But the tide of opinion is turning against therapeutic nihilism, and Prof. W. E. Dixon, at a meeting of the Hunterian Society on Monday, March 30th, stated as one of the reasons which have altered our views on the action of drugs, that we have now learned that the body itself works by means of drugs of its own manufacture. It manufactures alkaloids, just as plants do, for its own needs. In emergencies our internal secretions may provide us with drugs required for our well-being—in rage or fear a rush of adrenalin will produce the conditions required for fight or flight. Chemotherapy is also opening up a new outlook in medicine with regard to specificity, and, while increasing specificity in pharmacology widens the field of successful treatment of disease, it also increases the possibilities of the abuse of drugs. It is a difficult matter to draw the line between use and abuse of a drug. For example, quinine is a specific for malaria, but its use to treat a cold may be classed as an abuse so long as there is no definite organism susceptible to quinine and ætiologically connected with the cold. Dr. H. H. Dale, speaking at the same meeting, defined the abuse of drugs as their reckless and unintelligent use. Intelligent use of a drug, he explained, did not mean that the practitioner must have a full scientific appreciation of a drug's action; were that necessary many valuable drugs would require to be discarded. But it was essential to make close and accurate clinical observations, and not to rely on vague impressions and rule-of-thumb restrictions. Enlightened empiricism he described as being often a better procedure than basing treatment on a supposedly scientific foundation. Much is now being published both by scientific and lay writers concerning the rationale of the action of certain pharmaceutical products, and it is couched in scientific or pseudo-scientific terms whose main characteristic is extreme plausibility. Many of these "scientific" explanations contained in pharmaco-logical "literature" Dr. Dale considered to be dangerous, the danger lying, in his opinion, in the excessive modesty of the medical profession who were inclined to look on what they could not quite under-stand as being very deep and possibly very true. It was impossible, he pointed out, for anyone to know more than his own corner of the scientific world, and such an attitude of accessibility to mysterious data coming from another corner was to be deprecated. As an instance of this Dr. Dale quoted several statements that had been made on the one hand with perfectly genuine intent by a leader of the medical profession [illegible] ne with regard to the value of colloidal substances, and [illegible] suria the other by a firm of commercial chemists, per[illegible] these not so ingenuously; but both sets of utterance[illegible] in the entirely misleading. It was time, he said, that [illegible] nation of thing was done to rescue what might be [illegible] treatment from what might be manifest [illegible] the difficulties in differentiation are [illegible] This should not, however, cause the[illegible] insuperable. We congratulate the H[illegible] upon having elicited at their last [illegible] wise speaking on an important [illegible] was held at Simpson's Restaurant [illegible] well attended.

THE FIGHT AGAINST MALARIA.

LAST summer the Malaria Commission of the League of Nations Health Organisation undertook a tour of three months for the study of the incidence of malaria in Eastern Europe, visiting Italy, the Balkans, and Russia, and much valuable information was obtained. This year, from May to September, the Commission is extending on similar lines its inquiry into malaria conditions prevailing in Egypt, Palestine, Syria, eventually Turkey and Asia Minor, Sicily, Corsica, and Spain. At a session now in progress the Commission, which consists of experts from Great Britain (represented by Colonel S. P. James, of the Ministry of Health), France, Germany, Italy, Poland, Rumania, and Holland, is considering a final report on malaria in Albania prepared at the request of the Albanian Government, a request from the Turkish Government for the appointment of an expert to help in organising an anti-malaria campaign in Turkey, and a note from the French Government asking for a special inquiry in Corsica. Finally, the Commission will consider the appointment of additional corresponding members from British India, the United States, and France, and a report on the question of the employment of quinine and other cinchona alkaloids against malaria. Owing to the depreciated exchanges, this question of the cheapest and most effective drugs to use against malaria is of fundamental importance in the work of the Health Organisation on this subject.

THE PROGNOSTIC SIGNIFICANCE OF SCARLATINAL NEPHRITIS.

OUR knowledge is still very incomplete as to the duration of the damage inflicted by an attack of scarlatina on kidneys which, through the acute stage of the disease, have reacted with albuminuria. Is, for example, the small granular kidney, with which we are so familiar in the post-mortem room, the final stage of a series of events beginning with a bout of scarlatina? And how long do most cases of scarlatinal nephritis last before albumin disappears from the urine, and what effect, if any, does scarlatinal nephritis have on the development of orthostatic albuminuria? These are some of the questions which Dr. H. Hansborg, of the Blegdam Fever Hospital in Copenhagen, attempts to answer in a paper published in *Acta Medica Scandinavica* for Feb. 12th. In the 10-year period, 1911-1920, his hospital admitted 75 per cent. of all the cases of scarlatina notified in Copenhagen. Among the 14,339 cases of scarlatina admitted in this period, there were 812 complicated by hæmorrhagic nephritis. After subtraction of the cases which proved fatal in the acute stage of the disease, there remained 588 patients, 284 of whom were re-examined from one to ten years after discharge, the heart and blood pressure as well as the urine being investigated. Dr. Hansborg made a point of examining the morning urine in those cases in which orthostatic albuminuria was suspected, and he found that among the 284 ex-patients there were 23 who were suffering from albuminuria which was merely orthostatic. There was one patient found to be suffering from chronic nephritis, the characters of which distinguished it from that of scarlatina, and there was only one patient whose albuminuria, which had lasted for five years, could be reasonably regarded as a sequel to the scarlatinal nephritis. As many as 259 of the re-examined ex-patients showed no evidence of renal disease. Of these 259 patients, as many as 235 were already albumin-free when discharged from the fever hospital. Several of the remaining 24 patients took more than a year after discharge to get rid of their albuminuria. With regard to the 23 patients found on re-examination to be suffering from orthostatic albuminuria, Dr. Hansborg raises the question, May this condition be the result of a hæmorrhagic nephritis developing during an attack of scarlatina? One of his reasons for answering this question in the negative is that the frequency with which patients who had suffered from scarlatinal nephritis developed orthostatic albuminuria was no greater than the frequency with which this condition occurs in the general population at the same age. Besides, there was no relation between the severity of the scarlatinal nephritis and the frequency of the subsequent orthostatic albuminuria. Additional value would be given to Dr. Hansborg's investigations and reassuring conclusions if the former were to be repeated on the same material some score of years hence.

ACTIVATED CARBON.

ORDINARY charcoal, and especially bone black, is well known to possess considerable properties of decolorising liquids, absorbing gases, and promoting chemical reactions. Of recent years a modification of the element has been prepared known as activated carbon in which these properties are very highly developed as compared with the best bone black or any other hitherto known variety of carbon. In activated carbon the pores are of almost incredible smallness in size and have entirely porous walls which are not clogged up with impurities, so that the chemical reactivity of the material, on the principle of what the chemist terms "surface action," is improved out of all proportion. The methods of manufacture are complicated and require great experience, one general process, for example, being to carbonise under regulated and definite conditions carefully prepared carbonaceous mixtures, followed by an elaborate purification and extraction. In connexion with the manufacture it is right to mention the firm of Sutcliffe, Speakman, and Co., Ltd., of Leigh, Lancashire.

An important technical application of activated carbon is the extraction and purification of gases, especially the direct separation of motor spirit from the crude gases evolved in the carbonisation of coal, shale. and other carbonaceous material, by the use of a bed of the material. When this is saturated steam is blown through, and the motor spirit recovered in an extremely pure condition, thus eliminating a considerable amount of expensive fractionating plant. In the same way solvent naphtha and other solvents can be recovered and purified, and another valuable outlet is the absorption of obnoxious smells and vapours. The decolorising of oils and fats on these lines is almost entirely a new field and important developments are pending, the method being of considerable advantage for the purification of tallow, coconut oil, linseed oil, peanut and corn oil, cotton-seed oil, and castor oil. In the latter case, for example, fuller's earth is at present used, but the addition of activated carbon, about 5 per cent. by weight, gives far superior results. For solutions the material is finding the most extensive application, especially for cane-sugar, glucose, brewing sugars (maltose and lactose), tartaric acid, cream of tartar, citric acid, lactic acid, and organic compounds used as intermediates in dyestuff manufacture, together also for the extraction of gold from excessively dilute solution 1 part per 10,000,000 in the cyanide process. The purification of ordinary alcohol and the extraction of higher toxic alcohols (fusel oil) is another similar application. In applying the treatment to liquids generally the activated carbon is as a rule simply stirred up with the heated liquid for a short period and then blown through filter presses, the product being subsequently revived by various methods after acting for a number of times. Thus it may be boiled with water, re-burnt, or treated with acids or alkalies, and the method is capable of almost endless applications, especially, as already indicated, different carbons may be supplied for absorbing different materials, whether from liquids or gases. Activated carbon possesses considerable interest from a medicinal point of view since it is used in the tablet or powder form for the correction of flatulence, dyspepsia, and diarrhœa, and is said to be much superior in this respect to ordinary powdered charcoal. Indirectly it is of great value also in many different directions in the manufacture of pharmaceutical products, both for decolorising and purifying. It is also employed in the preparation of strychnine, quinine, brucine, and other alkaloids, and in connexion with very many different drugs such as antipyrine and phenacetin.

THE SEX INCIDENCE OF CANCER.

We have been told for so long and by so many authorities that cancer is much more frequent in women than in men that we are inclined to regard as unorthodox and heretical the view that the sexes suffer equally in this matter. The view that cancer is more frequent in women is based on the obviously true statement that cancer of the reproductive organs attacks women much oftener than men; the greater longevity of women is also said to be a reason why they are supposed to be more subject to cancer than men. Some recent investigations suggest that the comparative immunity of males to cancer is fictitious, depending on the fact that the forms of cancer which are most deep-seated, and therefore most easily overlooked, are more common in men than in women. A recent paper by Dr. A. Renaud[1] of Lausanne contains an informing statistical statement on the notifications of deaths from cancer throughout Switzerland in the period 1901-20. It is interesting to observe with regard to these notifications that carcinoma and sarcoma are kept apart, and that when a patient suffering from cancer dies of bronchopneumonia or myocarditis, for example, the cause of death is notified as cancer and not as a disease of the lungs or heart. The average annual mortality in Switzerland during the 20 years under review was 4717, males being represented by 2347 and females by 2370 deaths. Considering that women outnumber men, it might even be argued that the risk of a man dying of cancer in Switzerland is even a little greater than the same risk for a woman. As Dr. Renaud calculates, among persons over the age of 40 the annual cancer death-rate in the period under review was 1 per 214 men and 1 per 213 women. He notes in this connexion that experimental cancer in mice is equally common in the two sexes. Among his Swiss cases, as great a proportion as 73 per cent. of all the cancers in males affected the digestive tract, notably the œsophagus, stomach, and rectum, whereas this localisation was comparatively rare in females. Indeed, in the case of cancer of the œsophagus, the ratio of males to females was as 6 to 1. In another recent publication Dr. F. G. Gade[2] has pointed out that in Norway women with 51·8 per cent. of all the malignant tumours are at first sight a little worse off than men with 48·2 per cent. But as 51·3 per cent. of the population in Norway in 1920 were females, it appears that in Norway as well as in Switzerland malignant disease is equally distributed between the two sexes. It would be interesting if the cancer statistics of other countries, which have hitherto been supposed to show a preponderance of malignant disease in women, were to be revised in the light of the statistics from Switzerland and Norway.

THE LAST ILLNESS OF PRESIDENT EBERT.

There were special reasons why no mystery should be allowed to attach itself to the circumstances of the death of the late German President Ebert, and his medical advisers have, accordingly, published a full account of his last illness and the partial post-mortem examination. The authors of the report, "Bericht über Krankheit, Operation und Tod des Reichspräsidenten Ebert," which is published in *Deutsche medizinische Wochenschrift* for March 13th, are Dr. A. Freudenthal, the President's family doctor, Prof. A. Bier, who operated on him, and Prof. O. Lubarsch, who examined the contents of the abdomen after death. It appears from Dr. Freudenthal's account that Ebert, who was 54 years old at the time of his death, had suffered for a few years from occasional attacks of biliary colic which, on one occasion, was associated with jaundice. He had been ailing since Christmas, when he contracted what appeared to be an attack of influenza, and in February of this year he was complaining of lassitude, loss of appetite, and a cough. On the morning of Feb. 23rd he complained of pain in the liver region, and tenderness was observed over the gall-bladder. Elsewhere the abdomen was flaccid and not tender. A violent attack of abdominal pain began in the late afternoon of the same day, and on this occasion there was marked tenderness over the appendix with slight muscular rigidity. The rest of the abdomen was flaccid. At 8.15 P.M. of the same day the temperature in the axilla was 37° C., the pulse was 72, and there was an increase of the tenderness and rigidity over the appendix. An injection of morphine was given, and Prof. Bier was summoned. It was agreed that an operation should be performed at once, and Ebert was taken to a hospital where he was operated on at midnight. Much cloudy, odourless fluid was found in the peritoneal cavity, and the intestines were seen to be much distended and injected. The appendix, which was very difficult to find, was gangrenous and perforated. For several hours preceding death, which occurred on Feb. 28th, the clinical picture was characterised by intractable intestinal paralysis. At the necropsy the gall-bladder was found to contain calculi, and there were ulcers of the stomach, one of them extending down to its muscular layer. The lining of the small intestine was necrotic in places, and it was probable that the changes in its walls were not altogether recent. Indeed, it seemed that the intestinal paralysis, which contributed so much to the fatal issue, depended not only on the inflammation of the peritoneum, but also on the diseased condition of the mucous lining of the stomach and intestine. The interval between the onset of vague abdominal symptoms and the operation was one of 20 hours, and seven hours between the detection of signs of appendicitis and the operation. One of the many features of this case which is of interest to the surgeon is the liability of a history of recurrent attacks of biliary colic to delay the diagnosis of an acute attack of appendicitis. Passing from this isolated case to generalities it is interesting to note that, as a rule, much greater publicity is given to the causes of death of distinguished persons abroad than in this country. Reticence in such matters is, of course, natural, but there is much to be said in favour of the course taken by the medical advisers of Germany's first President.

CARBOHYDRATE METABOLISM DURING PREGNANCY.

Since the introduction of insulin, all alterations in carbohydrate metabolism have received additional attention. Ehrenfest,[1] in a recent article, considers the matter very fully. So long ago as 1895 it was shown by V. Jaksch that 100 g. of glucose taken by mouth would cause a glycosuria in the majority of pregnant women; this amount has no effect on non-pregnant ones, and certain tests for pregnancy are based on this fact. The routine testing of the urine of pregnant women has shown that glycosuria as estimated clinically is not uncommon in these subjects, and the improvement of technique in the estimation of blood-sugar reveals the explanation of this phenomenon, which lies apparently in the lowering of the "renal threshold" for sugar. There are, however, other factors at work. During pregnancy the whole of the endocrine system is in a condition of hyperactivity. The increased activity of the thyroid which has been proved to exist results, according to Olmstead and Gay, in an increased metabolism, a delay in glycogenesis, or augmented glycogenolysis. It is well known, too, that increased activity of the adrenal tissues results in glycogenolysis with a resulting hyperglycæmia and glycosuria. That pregnant women are abnormally sensitive to injections of adrenalin is known, and all evidence suggests that in them the adrenals are in a state of hyperactivity. The difficulty in assessing the action of the ovarian secretions is very great on account of their multiplicity. Some interesting experiments by Kuestner show, however, that a secretion from the ovary of pregnant animals is responsible for a lowering of the sugar tolerance. The increased activity of the pituitary during pregnancy is familiar, and this factor considered alone results again in the lowering of the sugar tolerance. In spite of an alteration in all these factors having a bearing on sugar metabolism, authorities agree that the blood-sugar concentration in healthy pregnant women varies within the normal limits. We must conclude, therefore, that although metabolism takes place on a higher rate, it remains normal. The lowering of the renal threshold for sugar may be a protective mechanism against the effects of hyperglycæmia on the fœtus.

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[1] Paris Médical, Feb. 21st, 1925.
[2] The World's Health, October, 1924.

[1] Ehrenfest: American Journal of Obstetrics and Gynæcology, December, 1924, vol. viii., No. 6, p. 685.

INDUSTRIAL ACCIDENTS AND DISEASES.

A MEDICAL congress, the Fourth International Medical Congress for the Study of Industrial Diseases and Accidents, will be held in Amsterdam in September, commencing on Monday, the 7th, and concluding on the following Saturday. This is the first representative meeting of medical authorities to be held since the war, and so much work has been done in this country along the whole line that we may expect our delegates to play a prominent part in the conference. The President of the Congress is Dr. P. H. van Eden, of Amsterdam, and the British Executive Committee consists of Mr. R. de Marees van Swinderen, the Minister of the Netherlands (Hon. President), Sir Thomas Oliver and Prof. E. L. Collis, as President and Vice-President, respectively, and the following members of Committee: Dr. D. A. Coles, Sir William Collins, Prof. J. Glaister, Sir K. W. Goadby, Sir William Hale-White, Sir Robert Jones, Dr. J. R. Kerr, Dr. A. Mercer, Dr. Howard Mummery, Dr. A. Scott, Dr. Theodore Thompson, Dr. A. Trimble, Dr. H. M. Vernon, Dr. Thomas Watts, M.P., and Dr. R. Prosser White. Dr. C. S. Thomson is Hon. Treasurer, and Dr. H. Menko, 2, Grosvenor-gardens, London, N.W.2, is Hon. Secretary, from whom full particulars may be obtained. It will be seen that the constitution of the Committee warrants the expectation that they will make practical contributions to international wisdom on a difficult subject.

PROF. GUIDO BANTI.

Guido Banti died early in the year, aged 72, at Montebicchière in Florence, the place where he was born and from which he rarely moved. For 35 years he was director of the Institute of Pathological Anatomy in Florence and also physician to the Hospital of Santa Maria Nuova, where he had 150 beds. A retiring man of the true scientific type, he was personally hardly known outside his own country, but Banti's disease has made his name familiar to the whole world of medicine. Two notices of him by former pupils (*La Riforma Medica*, Jan. 25th, and *Revista Sudamericana di Immunologia*, Feb. 15th) depict a man who was deeply beloved and admired by his students, one who had a great reputation both as a clinician and pathologist, though his outspoken frankness and tendency to regard the patient rather as a scientific problem prevented his being successful as a physician with the public. He was not a voluminous writer, but his published works covered a considerable range of subjects. Almost his first work was on aphasia, in which he tried to enlarge the somewhat narrow teaching of the French school. In 1881–82 there followed contributions on the progressive anæmias and on splenic anæmia; in 1886 one on the bacteriology of cerebral meningitis. His theses on splenic anæmia,[1] in Italian, attracted little attention, but in 1894 he published papers both in French and German journals on splenomegaly with cirrhosis of the liver, which won him recognition as a great clinical observer and has caused his name to be indissolubly associated with that type of the disease. In 1895 he published a short work on endocarditis and nephritis, and in 1902 one on the pathology of the lung. In 1905 there appeared the first numbers of a great work on pathological anatomy, but this, unfortunately, was never completed, partly owing to his having suffered for years from writer's cramp. From 1908–17 he was editor of the *Rivista Patologica Quindicinale*, published at Genoa, and he made no further individual contributions to medicine. It will be seen that Banti's work covered a considerable field. He had a keen, independent, and progressive mind and an immense store of clinical and pathological experience and he was an indefatigable worker. His papers are excellent examples of close reasoning, based on keen observation and great knowledge; they are neither dogmatic nor obsequious to received opinion. There is little doubt that had he written in a language more generally accessible to physicians, he would have attained a much wider reputation, one that would have justified all that his countrymen thought of him.

THE NEW FACTORIES BILL.

IT is an open secret that the prospects of this Bill have been much improved by the stream of steady explanations which has been forthcoming from experts on the subject. Many Members of the House of Commons have taken advantages of opportunities for real comprehension of the views of those who see in the Bill an overdue measure for righting certain manifestly wrong positions, and in this way apprehensions of unduly burdening the factory owners are, we think, being dissipated. At the University of Birmingham this week Miss L. Carbutt, who has acted as a temporary Inspector of Factories, gave a lecture under the auspices of the Y.W.C.A. Industrial Law Bureau, in which she drove home those general points that have been emphasised in the press, while she added an argument of considerable force for reform when she stated that in a large Birmingham factory during the past winter the women had worked throughout every Saturday afternoon, bringing their total work for the week up to 60 hours. The Government can see, therefore, that the legislation which is definitely included in their programme is necessary as well as widely desired.

AS already announced in THE LANCET, an International Congress on Thalasso-Therapeutics will be held at Arcachon from April 22nd to 25th.

THE House and Library of the Royal Society of Medicine, 1, Wimpole-street, London, W., will be closed from Thursday, April 9th, to Tuesday, April 14th, both days inclusive.

AN extraordinary general meeting of the members of the National Council for Combating Venereal Diseases will be held at the Board Room of the Girls' Friendly Society, 30, Victoria-street, London, on Monday next, April 6th, at 4 P.M., to consider and, if thought fit, to pass the following extraordinary resolution: "That the name of the company be changed to the British Social Hygiene Council." Should the resolution be passed by the requisite majority, it will be submitted for confirmation as a special resolution to a second extraordinary general meeting which will be subsequently convened.

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[1] Osler and Macrae, first edition, vol. iv., p. 759.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CXVI.—TREATMENT OF ACUTE PERITONITIS.

ACUTE general peritonitis is nearly always, unless it is a terminal condition, the result of a sudden incursion into the peritoneum of infecting organisms from a local source of supply. There are many causes, but by far the great majority of cases will be found to originate in a perforated appendix or a perforated gastric or duodenal ulcer. Less frequent causes are ruptured tubes, ruptured gall-bladder, acute pancreatitis, traumatic perforations—e.g., a kick in the abdomen—and so forth. The main point in the treatment is to establish the diagnosis at once, open the abdomen, stop the leak, and provide for the removal by drainage of the products of the leakage.

Signs of Peritonitis.

The signs of a general infection of the peritoneum are as a rule unmistakable. Rigidity, complete and universal, over the whole abdomen, is enough in itself. More important, because a few hours earlier in onset is the "expression" of the abdomen when it moves. For, contrary to the usual teaching, the peritonitic abdomen is *not* always motionless except in late cases. The movement, however slight, is characteristic.

It is diagnostic in most cases before one puts a hand on the abdomen. *A hand on the chest and an eye on the abdomen is the best procedure.* In a normal patient the abdomen comes out when the chest comes out (except for the first three or four respiratory movements, which should be ignored because all patients breathe self-consciously when first exposed). *If after the first few breaths the abdomen goes in when the chest comes out,* then the patient has a diffuse leak, will be found on palpation to have complete rigidity, and on laparotomy to have general peritonitis. It is a most important sign because a perforation may be accompanied by a low pulse-rate (44-48), and when this is combined with a normal temperature and false abdominal movements, it is as though the forces of Nature were conspiring to deceive the unwary diagnostician. It must be distinguished from the "morphinised" abdomen in which the movements are slight but in the normal direction. Moreover, there is a further refinement. If a transverse crease half an inch above the umbilicus is seen in an abdomen which has the reverse movement described above—or no movement at all, then the patient is likely to have a perforated duodenal or gastric ulcer. If, on the other hand, there is a transverse motionless axis about two inches below the umbilicus round which the abdomen "rocks"—i.e., the wall goes in below this axis and out above it—then the trouble is probably in the appendix, which is leaking mainly into the pelvis and less so towards the upper abdomen.

Owing to duodenal leakings coursing down over the right iliac fossa, duodenal perforations and ruptured appendixes are often identical in abdominal "expression" and rigidity. Vomiting is against gastric or duodenal ulcer and in favour of appendicitis. High temperature early is against both. But since diffuse rigidity tells us that a suprapubic drain will be required, a useful plan is to make a small suprapubic incision first and see what kind of fluid escapes. Pus which smells suggests appendicitis; pus without smell suggests a perforated gastric or duodenal ulcer; blood, an ectopic gestation, or pancreatitis. The next step is to stop the leak. Duodenal and gastric ulcers can nearly always be felt before they are seen, and the bubbles and turbid fluid will lead to the right direction. The ulcer should be boldly inverted, going through all coats with, for choice, floss silk. The second row of inverting sutures can be and should be catgut.

Drainage.

If the lesion is appendicitis the appendix should be removed, the stump inverted, and suprapubic drainage provided. This may be of glass or rubber. If of glass, which I prefer, it should be long rather than wide, and should settle down firmly in the pouch of Douglas so that its deep end cannot be moved by pushing the superficial end backwards, forwards, or from side to side. *The feel of a "set" suprapubic tube is characteristic, and it will not be displaced* by the patient's movements. Care should be taken that there is not a coil of small intestine between *the tube and the rectovesical pouch.* The average time to leave it in is 1½ to 2 days, but if any doubt exists a smaller rubber tube should be pushed down the glass tube *before removing the latter,* and in any case the tube should be rotated round its own axis within 24 hours to prevent omentum growing into the holes.

It is the practice of many surgeons to sew up these cases without drainage. Personally, I have never seen a suprapubic tube—properly managed—do any harm, and I believe that occasionally a case can be saved through providing drainage. Speed is an important factor in these operations.

The treatment of the extravasated contents and turbid fluid or pus has been much discussed. Most surgeons are now of opinion that it should not be wiped or washed. Lymph should not be picked off; it is protective. The function of the peritoneum is, in fact, to have peritonitis if necessary. Incidentally the use of packs in diffuse peritonitis is to be deprecated. They waste time and they rub the peritoneum, both things to be avoided.

The Fowler Position.

Suprapubic drainage is based on the fact that while we cannot drain the whole peritoneum we can at least put a tube into a place towards which we can coax the fluid to run by the position of the patient. *This is the basic idea of the Fowler position.* No excuse about the patient having "just slipped down" should be accepted. The angle should not be extreme but should be constant; there are many methods for maintaining the position. I used at one time pieces of wood triangular in section and the length of the width of a bed. The three sides of the triangle were *unequal,* so that one side could always be found to match the patient's thigh. One of these was put *underneath the mattress and fixed. The aim is to* produce by this or another method combined with a back-rest a large V into which the patient sits. I gather from the angle at which Murphy bends the rectal tube that the angle preferred by him is an exaggeration of the Fowler position. Experiments on the cadaver suggest that an angle of 45 degrees is enough to drain the whole of the peritoneal cavity; but this may not be applicable to the living. The patient should be put in the Fowler position while waiting for operation. Further, when he has to be moved to a home or hospital an ordinary motor-car is better than an ambulance because he cannot lie down in it.

After operation the patient's whole lymphatic system should be flushed with fluid in order to help the excretion of the toxins through the peritoneum. Rectal salines by the continuous method or by repeated injection are the most valuable. These can be supplemented or replaced, if the rectum is intolerant, by subcutaneous salines into the chest, rather than the thighs, which are too near the drainage-tube and liable to suppurate. As much fluid as possible should be given short of waterlogging the patient, and plenty of fluid may be given by the mouth even if the patient vomits.

Purgatives.

Purgatives after operation are open to discussion, but I *always give 3 gr. of calomel 24 hours after* operation—all in one dose so that if the patient vomits it can be given again without working out minute fractions. This is followed, in rapid succession until the bowels act, by mist. alb., a turpentine enema, pituitary extract, and eserine. The two latter seem to act on different types of cases, but it is difficult to prophesy.

My object in giving purgatives is not that I think people recover from peritonitis by having their bowels moved, but, first, because any distension hampers chest movements and increases the liability to bronchitis, and, secondly, because I want to know early if the patient is going to have post-operative paresis of intestines or not. An enterostomy may save him on the third day, but will probably be credited with having killed him if done on the fourth day. Lastly, I believe if the bowels are kept mildly wriggling for a few days after operation it prevents a thin film of lymph attaching one piece of gut to another from becoming a permanent organic adhesion and thus causing obstruction in a week or two.

Special Cases.

With regard to special cases, the question of doing a gastro-enterostomy at the time of perforation of an ulcer can only be decided by experience. Those surgeons who always do it appear to me to be wrong, and those who never do it equally wrong. It depends on a rapid summation of the following facts. If the number of years' history of ulcer is large, a gastro-enterostomy is indicated since mere suture is not likely to cure. If the number of hours since perforation is large, a gastro-enterostomy is not indicated since the toxæmia is great and operation should be as short as possible. If the number of minutes it takes the particular surgeon to do it is large, a gastro-enterostomy is not indicated. The fourth factor concerns the degree of stenosis produced by inverting the ulcer. This, I would point out, is never so extreme as one would think, from the peritoneal view of the pylorus or duodenum, and is only occasionally, by itself, an imperative indication for a gastro-enterostomy at the time of perforation.

Remote complications are, of course, bronchitis, pleurisy, and above all subphrenic abscess. Localised abscesses must be looked for as hard tender spots, and should be opened. The later they appear the safer it is to wait until they are localised.

Another complication which may supervene from 10 days onwards is a band forming as a result of the infection in the peritoneum. Persistent vomiting with a rhythmic pain and painless intervals is the best sign of this condition. Rarely have I noticed visible peristalsis under 11 days. The site of the band is fairly constant—it ties down the terminal ileum about two feet from the ileo-cæcal valve, and is due to this coil lying in the pelvis, the last part of the peritoneum to be freed from infection and, moreover, the site of the drain. The adhesion can usually be flicked off with a finger, and if operation is performed early nothing more need be done.

Conclusion.

It should be remembered that the four factors—early and quick operation, suprapubic drainage, Fowler position, and the administration of salines—have altered during the last 20 years the mortality of general peritonitis from over 80 per cent. to less than 20 per cent.

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Shenley Mental Hospital.—A new mental hospital for the County of Middlesex is to be erected at Shenley. It is to be on a modified villa system and will accommodate 2000 patients. In addition to the villas there will be enclosed buildings for 500 patients who are unfit to associate with the better type, and four buildings for about 270 sick and infirm.

Special Articles.

PRESERVATIVES IN FOOD.

By Reginald Dudfield, O.B.E., M.B., D.P.H.,
Medical Officer of Health, Paddington.

The communications which have appeared in the daily press since the issue of the Draft Regulations relating to the use of preservatives and colouring matters in foods make it desirable to inquire whether there be any statistical evidence indicating that harm has resulted from the use of what may be termed medicated foods. Many who have studied the question as a whole have strong suspicions that the use of chemical preservatives not only introduces risks of general accumulations of drugs in the system but also so interferes with the processes of digestion resulting in irritation of the intestinal mucous membranes, due to the presence in the digestive tube of foods which are not completely digested; these are then passed to lower parts of the tube not physiologically fitted to deal with foodstuffs in that condition.

It seems certain on first inspection that indications of increasing morbidity of the digestive tract—and more especially of the digestive tube—are to be found in the table of fatal cases of peritonitis, of gastric and duodenal ulcers, and of perityphlitis and appendicitis observed at Guy's Hospital during the 40 years 1880–1919.[1] Comparing the deaths of the first quinquennium (1880–84), when there was not a single death from either gastric or duodenal ulcer, with those of the last (1915–19), the latter show an increase of 168 per cent.

If the "irritation" theory of cancer, using that term in its loosest sense, be accepted, the mortality rates from cancer should yield at least a suggestion of the ill-effects of medicated foods, supposing that such medication interferes with digestion. The mean rates (Table I.) for the six decennia, ending 1910, have been taken from the Supplement to the Seventy-fifth Annual Report of the Registrar-General (Pt. III., p. ccviii.). The index numbers for the total (persons) mortality rates are shown in Table II.

Table I.—*Cancer: Annual Mortality per Million.*

	P.	M.	F.
1851–60	326	207	440
1861–70	396	255	522
1871–80	481	333	619
1881–90	610	465	739
1891–1900	767	639	882
1901–10	867	784	942

P. = Persons. M. = Males. F. = Females.

Table II.—*Index Numbers: Persons.*

1851–60–100 : 1861–70–121 : 1871–80–148
1881–90–187 : 1891–1900–235 : 1901–10–266.

During the second and third decennia the increases in the mortality were 21 and 27 per cent., but in the fourth (1881–90) there was a sudden rise to 39 per cent.—the increase being taken by differencing each successive pairs of numbers. The use of drugs as preservatives of foods began somewhere between 1880 and 1885, and the two sets of figures here given show increases in morbidity (in the one case) and in mortality (in the other) roughly coinciding with the inception of the practice.

The earliest distribution of deaths from cancer according to the sites of the disease appears to have been made in 1901. At any rate, search for tables of distribution by sites, made in the Supplements to the Annual Reports of the Registrar-General, has led to the finding of two decennial tables only, one for 1901–10[2] and the other for 1911–20.[3] In the former ecennium there were 309,111 deaths from cancer—27,807 of males and 181,331 of females—and in the atter 400,374 deaths—175,871 of males and 221,503 f females. The numbers in the second decennium 1911-20) show increases of 23 per cent. for persons, 8 for males and 21 for females.

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[1] Proc. Roy. Soc. Med. (Section of Medicine), xvi., 45.
[2] Ann. Rept., 1910, p. lxii.
[3] Ibid., 1921, p. 62.

The deaths from cancer of the intestinal tube uring the two decennia were as given in Table III. he numbers recorded during the second period show he increases (per cent.) over those for the first given n Table IV. It will be seen that in all instances the roportional increases were greater than those noted or the total mortality from cancer. These figures aturally suggest that the proportions of the deaths rom cancer situated in the intestinal tube, expressed s percentages of the total numbers of deaths from ancer, have increased. The actual changes are shown in Table V. Table V. can be extended to 1922, the last year for which any statistics are available.

TABLE III.—*Cancer: Deaths Recorded.*

	1901-10.			1911-20.		
	P.	M.	F.	P.	M.	F.
(1)	53,138	27,324	25,814	69,760	36,833	32,927
(2)	24,391	10,322	14,069	41,877	18,903	25,974
(3)	23,782	12,963	10,819	32,304	18,297	14,007
Totals	101,311	50,609	50,702	140,941	74,033	72,908

(1) Stomach. (2) Intestine. (3) Rectum.

TABLE IV.—*Cancer: Percentage Increases, 1911-20.*

	Persons.	Males.	Females.
Stomach	31	35	27
Intestine	84	83	84
Rectum	36	41	29
Totals	45	46	44

TABLE V.—*Cancer: Ratios (Per Cent.) of Deaths to Total Deaths from Cancer.*

	1901-10.			1911-20.		
	P.	M.	F.	P.	M.	F.
(1)	17·1	21·3	14·2	17·4	20·9	14·6
(2)	7·8	8·0	7·7	10·2	10·7	11·5
(3)	7·6	10·1	5·9	8·0	10·4	6·2
Totals	32·7	39·5	27·9	36 6	42·1	32·4

	1921.			1922.		
	P.	M.	F.	P.	M.	F.
(1)	17·6	21·4	14·6	18·3	21·6	15·5
(2)	12·0	11·4	12·5	12·0	11·8	12·2
(3)	8·3	10·6	6·5	7·9	10·2	6·1
Totals	38·0	43·4	33·6	38·3	43·6	33·9

(1) Stomach. (2) Intestine. (3) Rectum.

PROCEEDINGS OF THE ROYAL COMMISSION ON NATIONAL HEALTH INSURANCE.*

(Continued from p. 679.)

EVIDENCE OF THE NATIONAL CONFERENCE OF INDUSTRIAL ASSURANCE APPROVED SOCIETIES.

(App. VI., 1 and 2.) The societies associated with the National Conference in the administration of National Health Insurance include, amongst others, the Liverpool Victoria, the National Amalgamated, the Royal Liver, and the Prudential Approved Societies. The number of insured persons who are members of the associated societies is over 6½ millions, of whom about 3½ millions are men and 3 millions women.

Home Service.

(App. VI., 3-8.) The membership of these societies consists in the main of those persons not previously associated with friendly societies. The benefits are paid and the contribution cards distributed and collected by means of the agency staffs of the various societies within the Conference, constituting an organisation which effectively covers practically every town and village in the United Kingdom. It is claimed for this "home service" that it is of great assistance to the insured persons, who are kept informed as to their position in insurance.

Getting the Act Started.

Evidence on behalf of the Conference was given by Sir Thomas Neill, Mr. E. F. Spurgeon, and Mr. E. T. Palmer. (Q. 1132.) They said that at the outset the Government of the day made an appeal to the Industrial societies to assist in making the National Health Insurance Act effective, and that it was generally conceded that but for that assistance the Act might have broken down at the time of its inception, having regard to the [illegible] atmosphere in which it was born.

(Q. 1430.) Competition amongst the Industrial group in the sense of trying to take each other's members; or to take members from other societies, is very much deprecated by the society managers.

satisfaction. In this case the quorum required by some rules is one-third of the members in the district. This led to the following interesting questions :—

> (Q. 1721-5.) When it comes to a matter of policy which is perhaps critical of the management, and we look at what is . . . a critical part of the machinery whereby insured persons give effect to their control of the Society, you require a quorum not of 50, but a quorum in Manchester of 21,000, in Birmingham of 17,000, in Lancashire of 30,000, and all the rest of it. It is a physical impossibility, is it not ?—It is.
>
> Q. So that the machinery for self-government breaks down there ?—Evidently it does.

Spreading the Insurance Risk.

(Q. 1931-7, 1990.) The witnesses thought that the societies should not suffer by the segregation of people employed in hazardous occupations. Combinations of smaller societies seemed desirable and a group with 100,000 members was probably necessary to get a fair average of sickness experience. (App. VI., 11.) The Conference were of opinion that a scheme ought to be devised under which the Approved Societies should absorb the whole of the Deposit Contributor class.

Married Women.

(Q. 5098. App. VI., 15, 16.) Insured women on marriage should be allowed to accept a bonus and terminate their contract of insurance. There was no particular demand for this from the women themselves, but the present insurance provisions were inconvenient and wasteful in administration.

Medical Benefit.

(App. VI., 17-19.) The Conference recommended that attendance at confinements, if so required by the insured person, and at illnesses arising therefrom, be included in the contract of service of insurance practitioners, a prescribed sum for such service being paid to the practitioner from the maternity benefit due to the insured person from his or her society. Apart from this and possibly (Q. 5118) grant of medical attendance to the wives of insured members, no general extension of medical benefit was suggested, but in the event of any material change in the character or cost of medical benefit being recommended to the Royal Commission, the Conference asked to be allowed to submit its views thereon.

A Fair Run for the Panel Doctor.

On the subject of the medical service for the insured, Sir Thomas Neill said that he did not wish to make any general criticism.

> (Q. 5121.) Even in the case of dignitaries of the Church and elsewhere you find there is a great deal of attention drawn to the wrongdoings of individuals. It is the same with medical service. There have no doubt been quite a lot of men who have had no regard to their obligations, but I think the medical profession and the Insurance Committees are dealing with this.

The medical service has *not had* a chance to function peacefully until 6 or 12 months ago, when the last arrangement was made with the medical profession.

> I do not think we have had a *fair* run with the present panel practice in peace and quietness to see really what it will do under these new regulations, and I would not be inclined to advocate it being extended for the present.

Specialist Services.

(Q. 5227-33.) The witness deprecated extensions in the way of specialist services at the present time, though he thought that in a few years the " top of the profession " should be available " for everybody."

Dental Benefit.

(App. VI., 22.) The Conference accepted the view " so widely held " that a measure of dental treatment should be available to all members of Approved Societies. The scale of fees and the character of the dental service should be negotiated by a special committee representing the Ministry and Approved Societies on the one hand and the dental profession on the other. It was suggested that ½*d.* out of every contribution should be credited to a central fund, and that this fund, after meeting certain charges, should be distributed to societies for the purpose of providing as a first charge dental treatment on a uniform basis throughout the country. This proposal appears from the evidence to be merely a means of avoiding a pooling of any part of the societies' surpluses. (Q. 5302.) The witnesses said that while they objected to raiding surpluses, there was not the same objection to anticipating a surplus. Sir Alfred Watson asked :—

> (Q. 5201.) I want to know why all that elaborate financial structure is required, seeing that all you are after, *so far as my ability enables me to judge*, is a clause or series of clauses in the Act creating the right to statutory dental benefit, and imposing *on* all societies the obligation to administer it and to pay for it out of their funds ?

The answer to this question was elaborate but a little unconvincing. As to the extent of the benefit, it was suggested in the evidence that ½*d.* per contribution would provide a sufficient fund to pay bills in full up to the first £ and 50 per cent. of the remainder.

(Q. 5398-9.) The witnesses objected to the proposed dental service being handed over to the local health authority. Sir Thomas Neill said :—

> As far as these people who are specially paying for this treatment are concerned, I hope this Royal Commission will not suggest that they should be dealt with in the same way as the tuberculous insured who are not being properly attended to ; nor in the same way as the blind people who should be provided for under the Blind Persons Act, and who are not being properly attended to.

Insurance Committees.

(Q. 5148-9.) The Conference which the witnesses represented are in favour of maintaining Insurance Committees as at present constituted, and with their existing duties, but they were not in favour of entrusting them with additional duties.

EVIDENCE OF THE MANCHESTER UNITY APPROVED SOCIETY.

Evidence was given on behalf of this society by Mr. Edwin Heather.

(App. VII., 4-23.) The Manchester Unity Friendly Society was established in 1810. This Approved Society is the largest of the affiliated orders administering National Health Insurance. The Manchester Unity is governed by the members themselves formed into branches called Lodges. Every member has an opportunity of taking part in the administration of the affairs of Lodge, District, and Order. He may pass through the various offices of Lodge and District, he may be a deputy to the Annual Movable Conference, and has opportunities of attaining the highest position in the society. The society claim that the system creates self-dependence, builds up character, teaches mutual responsibility, fosters the cultivation of fraternal principles, and is therefore a great national asset. It is working well and efficiently. (Q. 5466-8.) There are 3500 Lodges in the society and the average membership for each Lodge is about 250.

(Q. 5497.) The number of members who pay for extra benefits on the private side as well as being State insured is nearly half a million. (Q. 5525.) Those who are State insured only do not display much interest in the work. They have joined the Manchester Unity just as they might have gone to an Insurance Company and taken out a policy.

(Q. 5486-7.) The witness said on behalf of the Board of Directors that they were treated with every consideration by the Ministry of Health, and he dissociated himself from the opinion implied by the words of the late Grand Master at the last annual meeting, when he said "We do not intend to become mere vassals of arrogant bureaucracy."

The Value of Voluntary Thrift.

(Q. 5578-91.) The witness emphasised the value of voluntary thrift. For this reason he deprecated any increase of the cash benefits under the National Health Insurance scheme. The society wished to provide for this by voluntary thrift because they thought it a valuable thing to the nation as a whole. (Q. 5759.) The compulsory character of National Health Insurance explained the lack of interest which members showed in the working of the scheme.

The Importance of Non-Cash Benefits.

(App. VII., 40.) The society state that there is a growing feeling that future surplus should be used in a greater degree for the provision of non-cash benefits rather than be applied to an additional few shillings per week as an additional sickness benefit which does not to any degree reflect itself in the restoration to good health.

Extension of Panel Service.

(Q. 5791-7.) The witness's personal opinion was that the treatment given by panel doctors is, generally speaking, of a satisfactory nature and that it compares favourably with that given to members of the society before the days of National Health Insurance.

(App. VII., 59-61.) The Manchester Unity are of opinion that the panel system should be continued and extended to include consultant and specialist services, the additional cost being met out of present contributions. (Q. 5831.) Until full arrangements with specialists are possible, it was suggested that these services should be arranged through the voluntary hospitals on a special scale of fees to be paid to the hospital.

Dental Treatment.

(App. VII., 53-8.) There is a considerable demand for this benefit and the society suggested that it should be one of the statutory benefits of the Act. Defective teeth are a predisposing cause of many diseases, and the provision of dental treatment would tend to lessen the other claims on the society.

(Q. 5779, 5800.) Though in general opposed to pooling of surpluses, the Manchester Unity for the purpose of this particular benefit agree to the principle of the strong helping the weak. If the benefit were not made a statutory one, the witness said they were prepared to make it uniform throughout their own society by means of a central fund to which all the Lodges would contribute.

Marriage Bonus.

(Q. 5846.) The Manchester Unity are opposed to a marriage bonus, mainly on the ground that if once conceded it would be difficult to refuse a bonus to other persons going out of insurance.

(App. VII., 63.) They propose that one year's free insurance should be granted to married women on ceasing insurable employment.

Sickness Benefit from the First Day.

(Q. 5891.) The society recommend that sickness benefit should be paid from the first day of incapacity instead of, as at present, the fourth day. This is done on the private side and causes no difficulty.

We recognise that it would, in the first instance, be an increased charge on the benefit fund, but we think it would subsequently mean a reduction of the charges for sickness benefit as it would prevent many cases of prolonged illness.

NEW HOSPITAL FOR DARLINGTON.—The pressure upon Darlington General Hospital (107 beds) has become so severe that a new War Memorial Hospital is to be built upon a site of 17 acres. There will be 220 beds and the cost will be £185,000. The complete scheme, to be carried out eventually at a cost of £232,000, will provide for 290 beds.

HOSPITAL BEDS FROM "SILVER PAPER."—It is stated that four beds in London hospitals have recently been endowed by the sale of the tinfoil or "silver paper" used for putting up tea, chocolate, tobacco, and cigarettes. It is understood that it is used for making solder, and 85 tons of it have realised £1250. The Ancient Order of Druids Tinfoil Fund, through its lodges all over the country, collects the paper and gives the proceeds to the local and London hospitals.

MEDICINE AND THE LAW.

THE FAILURE OF A CLAIM ALLEGING NEGLIGENCE.

THE Lord Chief Justice, with a special jury, recently tried an action in which Mr. W. Gray and his wife sued Dr. W. E. Peacock for damages for alleged negligence in treating Mrs. Gray during her confinement, Dr. Peacock counter-claiming for his fees. After three days' trial a verdict was found for Dr. Peacock and judgment was entered for him on the claim and the counter-claim, with costs.

On March 20th, 1923, Mrs. Gray, who had engaged Dr. Peacock to attend her in her confinement, was stated to have had signs of labour at 2 A.M., and felt the first real labour pains at 8 A.M., but to have experienced no serious pains during the day. Dr. Peacock was present at 10 A.M. and at 7 P.M., and at 8.30 P.M. attended in response to a telephone call, the pains having become serious at 8 P.M. With reference to the delivery, which was completed at 9.50, a question arose at the trial as to whether Dr. Peacock's offer "to help her" was understood by Mr. and Mrs. Gray to refer to the use of the forceps; but in any case he administered chloroform and used forceps, with the result that a male child was born, who is now strong and healthy. Rupture of the perineum took place, and Mr. Gray went out and obtained gut and needles for Dr. Peacock's use, as he was without them. It was stated that the adequacy of the gut was questioned by Dr. Peacock before he used it. The after-birth was left and removed under chloroform at 8 o'clock next morning by Dr. Peacock and Mr. R. M. Rowe. On March 31st the stitches gave way, and were not renewed until May 17th, when the patient had been taken to a nursing home, where she was operated on by Dr. F. J. McCann and Dr. E. Burnet. The plaintiffs' claim included £220 for expenses of treatment and convalescence thus incurred, and it was agreed that the counter-claim for medical fees should abide the issue on the claim. The principal points relied on in support of the claim, as to which interesting expert evidence was given, were the use of mechanical means of delivery at the stage at which they were employed, delay in removing the after-birth, and the suture of the perineum and its failure, including alleged undue delay in attending to the case after the stitches had given way.

Dr. Burnet said in evidence that an after-birth should never be left without removal for more than an hour, and that in no circumstances should the mother be left until it had come away. The medical attendant should come prepared for all contingencies such as a tear. In the case of a perineal tear of the third degree, a reparative operation should be performed immediately after the conclusion of the third stage of labour. In his opinion, there was no justification for the damage done or for leaving it without repair. He ascribed Mrs. Gray's condition to precipitancy in delivery, but not to delay in removing the after-birth. The fact, however, that the after-birth came away safely next morning did not justify the fact of its having been left. He had not himself attended a confinement for about ten years. Dr. McCann stated that when he performed the operation on Mrs. Gray on May 17th the matter was urgent. He was inclined to the opinion that it might have been performed on May 11th when he first saw her, but could not say positively that it might have been performed earlier. It seemed to him extraordinary that with severe pains not before 8 P.M. the forceps should have been used at 9.30. He agreed, in cross-examination, that Dr. Peacock's record of long practice without the loss of a child and with no case of sepsis was a fine one, and that such a man on the spot should be the best judge as to the use of forceps. He admitted that though, personally, he held the opinion that where the stitches in a perineal tear had given way an operation should take place as soon as possible, other medical men thought that it should be delayed, even for three months. A practitioner *acting on the latter view would not be failing to take* reasonable care. Mrs. Gray's condition was due, in his opinion, to the use of the forceps, but he was not prepared to say merely because the forceps had been used that its use was improper. Dr. W. E. Falconar expressed the opinion that if Mrs. Gray's own account of her condition were assumed to be true there was no such exhaustion on her part as would justify the use of the forceps.

For the defence Mr. A. W. Bourne gave evidence, and in answer to Lord Hewart said that the use of the forceps must depend upon the patient's symptoms and the condition of the child, and not on "the hands of the clock." Dr. L. Phillips expressed agreement with Dr. Bourne's evidence. Mr. V. Bonney, who had known Dr. Peacock for 20 years, gave evidence that it was not improper to use forceps an hour after the beginning of the second stage of labour. In a woman who had had nothing to eat all day exhaustion might result in nature refusing to do its work. Perineal tears did not prove precipitancy, and proper use of the forceps might minimise it. If first sutures broke down he always waited six months before a further operation, in order to avoid sepsis. The defendant, Dr. Peacock, said that he had been for 30 years in practice without any case of sepsis or loss of a child. He described Mrs. Gray's condition before and at her confinement. He stated that owing to her exhausted state he used forceps, and owing to her exhaustion and the danger of sepsis he left the after-birth unremoved. He had no reason to hurry the confinement and did not do so. He postponed repairing the broken-down suture because it was his practice to do so for at least three months. He was still satisfied with the result of Mrs. Gray's confinement. Nurse E. Ferry said that Mrs. Gray was rather frail and was very nervous before her confinement; on the day on which it took place she had been unable to take food; it was a very difficult birth and Mrs. Gray was exhausted. Mr. Rowe, who saw Mrs. Gray on the morning after her confinement, considered that events had justified Dr. Peacock's treatment of the case. When summing up the evidence, after counsel had addressed the jury, Lord Hewart said the question for the jury was whether or not Dr. Peacock had used reasonable care and was justified in using forceps, and if not whether Mrs. Gray's injuries were the result of his use of instruments and of his negligence. The jury, as has been stated, found a verdict for the defendant, who is to be congratulated upon a just verdict after a full and fair setting out of the arguments. The defence was conducted by Messrs. Hempsons on behalf of the Medical Defence Union.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

National Health Insurance Bill.

THE proposed Bill dealing with national health insurance (les assurances sociales) is causing lively apprehension for the future of medicine among the medical profession of France. Dr. Weiss, dean of the Medical Faculty of Strasburg, recently read a communication to the Academy of Medicine in which he described the results of the working of the system in Alsace and in Lorraine in so far as it affected the medical profession, showing how such apprehension was justified. In fact, Dr. Weiss held that the independence and the dignity of the doctor had been lowered, that the science of treatment had been debased, and that medical teaching had been compromised. The leader in the present movement against the system of health insurance is Dr. Balthazard, professor of forensic medicine at the Medical Faculty of Paris. He maintains that the proposed Bill, which is at the moment being investigated by the Senate through a Hygiene Commission, must be remodelled in such a way as to retain a certain proportion of the principles on which the reputation and high standing of present-day French medicine is based, and he is anxious that the Academy of Medicine should pass the following resolution: That, in order to avoid a set-back in medical progress, the law dealing with health insurance must respect the following principles, which are essential for the maintenance of the best traditions of French medical service, and which, if neglected, would preclude the profession from loyally upholding the law: 1. Free choice of doctor for the insured, and direct relationship between the doctor and the insured, without the interposition of clubs (caisses). 2. Absolute respect for medical secrecy. 3. Control of the insured to be in the hands of the clubs, the medical attendant acting solely in the interests of his patient. 4. Obligation on the part of the clubs to make use of the hospital organisation of towns which possess a medical faculty or a school of medicine, hospital fees being fixed by an arbitration commission.

Prophylaxis Against Tubercle.

Dr. Léon Bernard, professor of hygiene at the Faculty of Medicine of Paris, recently demonstrated before the Academy of Medicine the excellent results obtained in the prophylaxis against tubercle in young children by separating them from tuberculous parents and boarding them out (placement familial). The figures he quoted were based on five years' observation of children who had been kept free of the disease through the system of ante- and post-natal prophylaxis which he, along with Dr. Robert Debré and Dr. Marcel Lelong, had instigated and organised. Of 205 infants of tuberculous parentage who were removed from their families before any infection had taken place, all showed a period of retarded growth up to the age of 18 months and then became quite normal, both in regard to weight and powers of resisting infection. The resistance to the tubercle bacillus was particularly noticeable, for with one exception all the infants escaped later accidental infection. The mortality was relatively high in the first month of life, but after three months it was 5·7 per cent., a normal figure. Among 171 infants removed from a tuberculous milieu when already infected there was a certain amount of malnutrition during the first year, but at the end of 18 months body-weight and powers of resistance to infection were normal. The mortality from secondary tuberculosis was 7·6 per cent. Dr. Bernard also conducted an inquiry into the cases of infants who had either been refused boarding-out facilities or whose parents had refused to allow the separation. Out of 66 cases traced, 54—or 82 per cent.—had died, that is a mortality of 82 per cent. compared to 7·6 per cent. among boarded-out infants. These results show the prophylactic value of separation in combating tuberculosis where the infants are removed from a source of contagion.

An Accident with an Electric Iron.

Prof. Zimmern, of Paris, recently had to deal with a case where the patient had suffered severe injury through an accident arising out of the use of an ordinary domestic electric iron. The iron was connected to the house current of 220 volts. The victim, a woman, finding that the iron was not getting hot, took it up in her hand, and noticing that a screw was loose near the heel of the apparatus began to tighten it with her right hand, while with her left she grasped the ironing surface. The current was thus short-circuited through her body, and produced such a violent contraction of the flexor muscles of the forearm and of the elevating muscles of the shoulder that her left wrist was broken. In addition she sustained burns of the third degree on her fingers, and later she suffered intense pain in both shoulders, due apparently to injury to the nerves.

BERLIN.

(FROM OUR OWN CORRESPONDENT.)

A Berlin "Health Week."

HYGIENE propaganda on a large scale was recently carried out on behalf of the city authority in Berlin during the week from March 16th to the 21st. The "Health Week" was opened by a meeting in the town hall, where addresses were delivered by the mayor, the director of the municipal health office, and representatives of the medical faculty of the university and of the medical profession. A well-known hygienist, Prof. Drigalski, praised the work of the medical profession in the prophylaxis of epidemics and the improvement of the hygienic condition of the city. He stated that neither during the war nor afterwards had any appeal to the profession been made in vain, and that no other profession had done so much for the public welfare without remuneration as had the medical profession. During the week films on hygienic matters were shown in a great number of cinemas, and in every district of the town lectures were delivered by the district medical officers and other medical men on tuberculosis, infectious and venereal diseases, infant mortality, and analogous subjects. The lectures were attended by about 50,000 people. In the municipal schools the children were instructed by the teaching staff and by medical men on the importance of hygiene. Pamphlets were distributed free of charge throughout the city and the suburbs. The "Health Week" proved a success.

Meeting of Cancer Committee.

The Cancer Committee some time ago held a jubilee meeting together with the Berlin Medical Society. The meeting was honoured by the presence of the late President of the German Republic—his last attendance at a public meeting before his fatal illness. Lectures were delivered by Prof. Warburg on the metabolism of the cancer cell, and by Prof. Lubarsch on the history of cancer research during the past 25 years. Prof. Blumenthal, head of the cancer department of the Charité Hospital, spoke on the treatment of cancer by modern methods, mentioning that, apart from Rontgen rays and of radium, injections of thorium had proved successful. He suggested that he had been able to cultivate bacteria from cancer in human subjects. In 16 cases three different species of bacteria were found which on inoculation into animals produced new growths, which could be re-inoculated in animals of the same species and become ulcerous like cancer. To develop the growth, however, not only inoculation of the bacteria, but also addition of an irritant was necessary, infusorial earth having been chosen for that purpose.

A Wax Candle in the Bladder.

Before the Medical Society of Cologne Dr. Goldberg described the case of a patient who had introduced a small wax candle in the urethra. The candle unfortunately glided into the bladder, producing there hæmorrhagic purulent cystitis. After cystoscopy, to ascertain the presence and the position of the candle, Dr. Goldberg tried to remove it by a lithotriptor, but this proved impossible. He therefore made an injection of 50 g. of lukewarm benzine into the bladder, the result being that the wax was melted and could be drawn out together with the benzine by an evacuator. When the benzine had evaporated it was ascertained that the weight of the removed wax was equal to that of the candle, and that therefore no part of the candle had been left within the bladder.

Death from the Administration of X Rays.

The chief surgeon to a hospital in Dresden, his assistant surgeon, and a nurse were prosecuted recently on the allegation that they had caused the death of two women by the administration of X rays. The patients were suffering from cancer and they had applied the rays in high doses without using a safety filter. Severe burns were caused and death finally occurred. By post-mortem examination it was ascertained that the deaths had in fact been caused by the treatment. Expert evidence was given for the prosecution and for the defence. The court found a verdict of guilty of manslaughter by neglect. The assistant surgeon and the nurse were sentenced to two months' and one month's imprisonment respectively, being, however, allowed a postponement of the sentence upon bail. The chief surgeon of the hospital was fined severely, because, although not having been himself actively concerned in the treatment, he had neglected to supervise the work of his assistant and the nurse.

Responsibility of an Asylum.

A mentally afflicted man interned in an asylum begot a child with a nurse of the asylum. The nurse therefore brought an action for alimony against the patient and obtained a judgment for herself. The patient thereupon brought an action against the asylum to recover the costs, because they were responsible for not having sufficiently guarded him as was their duty. The court found against the asylum. The High Court of Justice, however, on appeal, cancelled the first judgment, stating that the asylum had neglected their duty by not selecting specially trustworthy nurses for a man who had been confined partly on account of his excessive sexual desires; on the other hand, it was decided that the patient had not totally lost his free-will by his mental disturbance. The asylum therefore had only to pay a part of the damages.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Comdr. E. T. Burton is placed on the retd. list with the rank of Surg. Capt.

ROYAL ARMY MEDICAL CORPS.

Maj.-Gen. T. W. Gibbard, K.H.S., late R.A.M.C., having attained the age for compulsory retirement, is placed on ret. pay.

Col. W. H. S. Nickerson, V.C., M.B., late R.A.M.C., to be Maj.-Gen., vice Maj.-Gen. T. W. Gibbard, K.H.S., to ret. pay.

Lt.-Col. V. J. Crawford, D.S.O., to be Col., vice Col. W. H. S. Nickerson, promoted.

Maj. G. H. J. Brown to be Lt.-Col., vice Lt.-Col. V. J. Crawford, promoted.

Capt. F. K. Escritt is restd. to the estabt. and relinquishes the local rank of Maj.

TERRITORIAL ARMY.

W. H. Gratrix to be Lt.

ROYAL AIR FORCE.

Flight Lt. J. C. Johnson relinquishes his temporary commission on ceasing to be employed.

ROYAL SUSSEX COUNTY HOSPITAL.—At the annual meeting of this large hospital at Brighton it was suggested that difficulties might arise in regard to the increasing number of motor casualty cases. During 1924 the casualties of all descriptions dealt with numbered 4208, as compared with 3832 in the preceding year. In addition, 1327 other cases were seen in the casualty department, an increase of 378, and 16,138 casualty dressings were done in the out-patients' department, an increase of 2203. It was explained that the great majority of the casualties arose from motoring accidents, particularly at week-ends, and with the continued increase of motors on the road the question was one which was causing grave concern to the governors. At the present moment it was believed that a ward for fractures only could be opened. In a fortnight in February this year there was a waiting list of 139, and of the 100 admissions 47 were emergencies and casualties. In-patients during 1924 numbered 3278 against 2588 in 1923, an increase of no fewer than 690. Brigadier-General D'Arcy C. Brownlow declared that the salaries they gave the nurses were inadequate in proportion to the great work they did for the hospitals.

Correspondence.

"Audi alteram partem."

THE BATEMAN FUND.

To the Editor of THE LANCET.

SIR,—The result of the Bateman Appeal is of such importance to the medical profession as a whole that, though I work abroad and am therefore beyond the verdicts of British juries, I send with pleasure a subscription.

As a callow house surgeon 25 years ago I nearly fell a victim to a jury ignorant of technical matters before whom a case had been stated incorrectly by a policeman on oath. I received the censure of the foreman of the jury, both on the conduct of the hospital and my own conduct, a censure which the surgical staff and the house committee of the institution immediately repudiated in the public press. I may add that, as I left the court-house speechless with rage, a man ranged up beside me and said, for my private information, that the foreman of the jury was, as a matter of fact, the person who had supplied the victim in question with the drink from which the fatal accident arose.

I have not forgotten the circumstances and, in enclosing my card, sign myself,

Yours faithfully,

Spain, March 20th, 1925. A VINDICTIVE SCOT.

HEALTH STATISTICS OF THE MERCANTILE MARINE.

To the Editor of THE LANCET.

SIR,—The interesting correspondence that you have recently published with reference to the health of the Mercantile Marine indicates that the progress that has been made both nationally and internationally during the last six years has not been fully appreciated.

Colonel Burke points to the conditions of seamen under the Merchant Shipping Acts in 1916, stating that "he is excluded from the benefit of free treatment." From 1920 until 1923 members of the Parliamentary Committee of the National Council made three endeavours to secure the passage of an amending Bill. This became the Merchant Shipping Amendment Act in 1923, and brings the treatment of seamen for venereal disease under the same conditions as other ailments. For the future, therefore, drugs will be available on every ship, together with such disinfectants as may be required by those who have exposed themselves to the risk of infection and are unable to visit a clinic before reaching the next port. The owners of the lines plying between the British and Scandinavian ports have for the last three years undertaken to distribute leaflets, giving the times and addresses of the free clinics in the ports at which their ships called.

Since 1918 the Office Internationale d'Hygiène Publique has had under consideration the question of securing continuous treatment for these diseases for seafarers of all nations. In 1920, at the International Labour Conference of the League of Nations at Genoa, the whole problem was discussed at a special meeting of the delegates, convened under the auspices of the National Council for Combating Venereal Diseases. As a result of this meeting, a set of resolutions was drawn up, adopted by the conference, and circulated to all participant Governments. They called for—

1. The provision of adequate facilities for the prevention and treatment of venereal diseases at all the principal ports.
2. The inclusion of venereal diseases among the conditions for which free drugs and treatment are provided for members of the Mercantile Marine.
3. The dissemination of appropriate information on the subject to seafarers, and especially to those at training establishments.
4. The provision of adequate facilities for recreation at all large ports under the administration of a joint organisation representative of owners and seafarers.

They desire, in addition, to call the special attention of the International Labour Organisation to the importance of recommendation No. 1 about facilities for recreation.

These resolutions were also transmitted to the Health Section of the League and stimulated general interest in the whole problem, assisting the Health Section of the League and the Office Internationale to secure support for the completion of the international arrangement relating to facilities to be afforded to merchant seamen for the treatment of venereal diseases.

The following countries have already signified their willingness to sign the agreement: Argentine, Canada,* Cuba, Denmark,* Finland, France,* Great Britain,* Greece, Italy,* Monaco, New Zealand,* Netherlands,* Peru, Roumania, Spain, Sweden,* Tunis, and Uruguay. Those marked with an asterisk have already opened free treatment centres, as has also the Government of Brazil.

With the coöperation of the Shipping Federation and of the Seafarers' Joint Council a special pamphlet entitled the Seafarers' Chart of Healthy Manhood, containing a list of over 200 free treatment centres in the principal ports of the world, which has been published by the National Council with the assistance of the Ministry of Health, is about to be distributed to the whole of the British Mercantile Marine.

The Union Internationale contre le Peril Venerien, established in conjunction with the League of Red Cross Societies, and on which 25 countries are represented, together with the Health and Labour Sections of the League of Nations, made the health of the seafarer one of their first considerations. In 1923 the Council of Direction appointed a Ports Committee, of which the representative of the National Council for Combating Venereal Diseases was appointed chairman. Arrangements are now in train to stimulate the practical application of the agreement by arranging for a small commission of two or three experts representing the Union Internationale to visit the principal trading ports. Shipping and seafaring interests in the different countries are being invited to coöperate with their National Social Hygiene or Anti-Venereal Disease organisation in raising funds to finance the undertaking.

It will be seen from the above that the National Council, in coöperation with the British Shipping Federation and the Seafarers' Joint Council, have kept the interests of the health of the British Mercantile Marine prominently in the foreground.

I am, Sir, yours faithfully,

S. NEVILLE ROLFE,
General Secretary, National Council for Combating Venereal Diseases.

102, Dean-street, London, W., March 30th, 1925.

To the Editor of THE LANCET.

SIR,—The letters of Dr. H. M. Hanschell and of Sir P. J. Michelli in your issue of to-day reinforce admirably, and with most practical illustration, the main plea in my letter of March 21st. In that letter I made no reference to the Port of London. I was taking it for granted that all who were interested in the venereally-diseased sailor were aware of the splendid work which has been, and is being, done by the Seamen's Hospital Society. That work is known and appreciated by all who sail the Seven Seas. What I appeal for might be translated as—"Let us have more work along similar lines at all other ports." Owing to the conformation of the Port of London, it is, as Sir P. Michelli says, practically impossible to have a treatment centre in every dock. Those at the Dreadnought Hospital and at the Albert Dock are handily situated; and I suggest no deficiency as far as the Port of London is concerned. My contention is that any large port which does not possess a treatment centre which is open all day and every day within the area of the docks or immediately adjacent, is making no attempt at the care of the seafarer who is the victim of V.D. For example, in the case of the Port of Manchester, the fact that in the neighbourhood—but by no means adjacent to the docks—there are at Salford Royal and at St. Luke's Hospitals V.D. treatment centres, is of little or no use to the sailor. These places are neither open all day nor every day. Most other ports are similarly situated—the sailor is not catered for.

When I referred to my ideal treatment centre being "exclusively for the use of sailors" I was thinking of it being actually within the dock boundaries. It would have expressed my idea better to have used the term "especially" rather than "exclusively," as I wished to indicate that the centre would not be for the use of the general population but for those whose work involved their presence inside the docks or who lived in the immediate vicinity.

Preventive treatment—in every sense of the term—is, I consider, essential in dealing with venereal diseases. The whole question is a public health one, and must be tackled along public health lines. I am aware of all that has been urged against this view, but that controversial aspect need not be discussed here. One would only point out to Dr. Hanschell that at the present time—as for centuries past—men are signed on who have risked infection, they are neither "cleansed nor injected," they proceed to sea, and a high proportion of them develop V.D. Owners, masters, crews, passengers, medical officers, all know it, and that the chance of such men developing disease is a very high one. Whether or not preventive treatment would increase the number of exposures is beside the point; it would assuredly reduce the number of infections. The fact that a man "agrees or confesses to a chance of developing V.D."—i.e., admits exposure to infection *and is treated on that*—practically ensures that chance vanishing. Preventive treatment efficiently applied and within the correct time does prevent the development of syphilis and gonorrhœa.

The certificate of prophylaxis which I mentioned in my last letter need not, of course, be attached to the man's papers. He might retain it himself. The former method was suggested to lessen the chances of the certificate getting lost, and the man suffering any unjust penalty on the grounds that he had neglected to avail himself of preventive treatment. Again one would express the *hope* that port authorities who have neglected to do so, will, in the immediate future, make arrangements for the prevention and treatment of V.D. in the areas administered by them.

I am, Sir, yours faithfully,

Manchester, March 28th, 1925. E. T. BURKE.

MALARIAL TREATMENT OF GENERAL PARALYSIS OF THE INSANE.

ICE METHOD OF INOCULATION.

To the Editor of THE LANCET.

SIR,—The ideal and most practicable method of infecting general paralytics with tertian malaria fever consists in the subcutaneous injection of 1½ to 3 c.cm. of malaria-infested blood withdrawn from the vein of a patient suffering from the disease. The procedure is likely to be attended with success where the inoculation is carried out immediately and when the donor and recipient can be brought together.

The impracticability of employing infected mosquitoes owing to relapses in conveying infection to cases of G.P.I. and the difficulties encountered in the cultivation of *Plasmodium vivax* outside the body beyond a definite length of time, have prevented many hospitals distant from a malaria-donor from adopting this method of treatment, and it is my purpose in this note to acquaint your readers of a method that has been devised and tried which will enable a patient residing in any part of the British Isles to acquire the disease irrespective of the distance between donor and recipient.

The technique of the method is easily carried out and was first described by Pötzl of Prague. Ten to 15 c.cm. of venous blood are withdrawn from a patient suffering from malaria fever and allowed to run into a sterile glass flask of 30 c.cm. capacity, containing 10 to 15 small glass sterile beads. The flask is closed with a sterile cork and the whole gently shaken for ten minutes, at the end of which time the blood becomes defibrinated and partially hæmolysed. The serum is then gently poured into a sterile test-tube, corked, and placed either in an ice-chest or a thermos flask containing ice at 0°C. The latter apparatus is convenient where it is required to send a sample of blood by train to some distant town or hospital. Blood has been sent in this way to London, Liverpool, Birmingham, and Cheadle (Cheshire).

My experience of this method of inoculation dates from Nov. 1st, 1924, since when a series of 12 cases have been treated. The amount of blood injected varied from 2 to 6 c.cm. and was given to the patient by the subcutaneous or intramuscular route. Up to the time of writing I have been able faithfully to reproduce the fever in ten cases with specimens of blood kept at 0° C. outside the body for a period up to 60 hours. Again, I have been able to stain tertian parasites in iced defibrinated blood aged 7 days.—I am, Sir, yours faithfully,

J. D. SILVERSTON, M.B., B.S. Durh.,
Senior Assistant M.O., County Mental Hospital,
March 28th, 1925. Whittingham, Preston.

THE TREATMENT OF PULPLESS TEETH.

To the Editor of THE LANCET.

SIR,—This letter is occasioned by the leading article in THE LANCET of Feb. 7th on this subject.

There are two minor points to which I take partial exception. These relate to (1) the interpretation of the results of the bacteriological examination, and (2) the economic feasibility of such an examination. In the first place, you write: "The ideal treatment should logically include cultures from the root canal to ascertain when they were free from infection . . ." This statement implies that it is possible to ascertain when root canal (periapical) infection has been eliminated. On the contrary, infection may be present in spite of a negative culture, which consequently does not *ipso facto* give the dentist warrant to proceed to the definitive occlusion of the canals. A positive culture, however, means emphatically that the canals are not yet ready for filling. In this lies the chief usefulness of bacteriological examinations in root canal work.

Further on the economic aspect of these examinations is brought up. "As a practical addition to private practice it is scarcely feasible, for it would add so much to the cost and length of treatment as to make it prohibitive except to a favoured few." This I do not believe is necessarily true, as will appear in what follows. For a number of years bacteriological, as well as roentgenographic, control of root canal technique has been routinely pursued in the clinics of the Dental School of the University of Pennsylvania. Our practice is first to have a smear made on a glass slide from a dressing which has been sealed in the tooth. This is not done until the clinical experience of the operator indicates that the root canals are ready for filling. This smear is stained and examined with an oil-immersion lens. If bacteria or extremely large numbers of polymorphonuclears are found the conclusion is drawn that infection persists. Treatment may be continued or recourse may be had to apical curettage, root amputation, or extraction. If bacteria are not found and if polymorphonuclears are few or absent, then a culture is taken. If this be negative 48 hours later, and if no clinical contra-indications appear in the meantime, the canals are definitively filled.

When I last went over the records 937 cultures had been made. Before each there had been a direct microscopic examination of a smear made from the canal dressing, which microscopic examination had failed to reveal bacteria. This negative result was confirmed by 467 of the cultures, and contradicted by 170 of the cultures. In other words, of two negative microscopic examinations, one will be confirmed and the other contradicted culturally.

These results also emphasise another point which is in consonance with the spirit of your article. Over one-half of the root canals, clinically deemed ready for filling, showed persistence of infection. This result by stressing the unreliability of clinical criteria alone stresses the value of bacteriological checks. Assuming for the sake of argument that a cultural examination is not generally feasible on economic considerations, this objection cannot hold for the direct microscopic examination of a stained smear. The time required for this is at a maximum five minutes. It is done while the patient is in the chair, and in case of a positive result one can at once return to the treatment. Not only is the time, but what is at least quite as important, the *continuity* of the treatment is saved.

Wherever cultural examination is for any reason not made, this direct microscopic examination alone may be used, and it has proved to be an appreciable improvement over current visual and olfactory tests. Many times a dressing, which grossly appears inoffensive, will show microscopically the incontestable presence of bacteria. This direct microscopic control in root canal work reaches its maximum of usefulness when dichloramin-T or some other lymphogogue is used in the treatment.

I am, Sir, yours faithfully,
JOSEPH L. T. APPLETON, Jun.

The Thomas W. Evans Museum and Dental Institute,
School of Dentistry, University of Pennsylvania,
March 11th, 1925.

THE HOSPITAL POLICY OF THE BRITISH MEDICAL ASSOCIATION.

To the Editor of THE LANCET.

SIR,—A meeting of the consultant physicians and surgeons attending the voluntary hospitals of Birmingham was held on March 20th. The meeting was called for the purpose of nominating members for the Local Hospital Committee of the British Medical Association, and for the purpose of discussing the hospital policy of the B.M.A. At this meeting the following resolution was carried unanimously:—

> That, taking into consideration the importance of medical education and the fact that the large teaching hospitals are specially organised and staffed for such work, this meeting is of the opinion that in the scheme of hospital policy of the British Medical Association these hospitals should be put in a class by themselves.

I am, Sir, yours faithfully,

Birmingham, March 26th, 1925. JAS. M. SMELLIE.

THE USE OF RADIUM EMANATION.

To the Editor of THE LANCET.

SIR,—It has recently been prominently stated in the lay press that the capture and clinical use of radon (radium emanation) by the Middlesex Hospital is a "new discovery." In justice to the Radium Institute, will you allow me to say that the technique of treatment by radon tubes has been practised here since 1912, and that the method adopted was published in the annual report of this Institute for that year. Since that date radon tubes have been supplied in steadily increasing number to medical practitioners and hospitals throughout the country, and in the year ending Dec. 31st, 1924, 1967 such tubes were distributed.

I am, Sir, yours faithfully,
A. E. HAYWARD PINCH, F.R.C.S.,
Medical Superintendent, The Radium Institute.

16, Riding House-street, Portland-place, London, W.,
March [illegible]th, 1925.

Obituary.

JOSEPH McGREGOR ROBERTSON, M.A., M.B., C.M. GLASG., F.R.F.P.S. GLASG.

THE medical profession of Glasgow mourns the loss of one of its ablest members through the death of Dr. McGregor Robertson, of 26, Buckingham-terrace, which occurred suddenly on March 17th, after he had addressed a meeting. He had been suffering recently from severe recurrent attacks of influenza, which had weakened his physique, but he refused to take the much-needed rest and carried on his work without pause until the end.

Dr. McGregor Robertson was born in 1858 and educated at Glasgow University, where he graduated M.A. in 1876, and M.B., C.M., with honours, in 1880. He was admitted to the Fellowship of the Royal Faculty of Physicians and Surgeons, Glasgow, in 1892. After graduating, he studied physiology under Du Bois Reymond, Kronecker, and Christiani in Berlin. As a student he was one of the most distinguished men of his year, and was admittedly the best speaker in debate. Then, as always, his clearly defined ideas were emphasised with point and vigour. The well-known professors in Germany with whom he was associated thought him both an able and original investigator, and united in paying tribute to his capabilities and unceasing industry. On his return to Glasgow he was appointed Muirhead Demonstrator of Physiology in the University and, as was customary in those days, he entered private practice as a physician. A distinguished academic life seemed assured, but his success as a physician was so rapid that the claims of his private practice prevented him from following the career for which by temperament, talents, and training he was so preeminently fitted. He was specially interested in eye diseases and became one of the surgeons at the Ophthalmic Institute. Recognising the value of radiology, he was amongst the first to instal an X ray apparatus in his private laboratory, and there, despite the increasing calls on his scanty leisure, he pursued throughout his life extensive research work. As an acute clinical observer, and as an accurate diagnostician, he could command the confidence of his patients. Though in chronic ill-health, he pursued ideals of medical practice which will remain an inspiration to all who had the privilege of knowing his work. During the war he was appointed hon. consulting physician of the Royal Naval Hospital, Bute, and to the Princess Louise Scottish Hospital, and latterly accepted a position as physician in the Stobhill Hospital. In 1921 the Royal Faculty of Physicians and Surgeons of Glasgow selected him to represent them on the board of managers of the Western Infirmary.

Dr. McGregor Robertson was an able lecturer with literary gifts which were well shown by his numerous contributions to medical literature. He published in 1881 a treatise on "Physiological Physics," and in 1887 an "Elementary Text-book of Human Physiology," and various papers dealing with such subjects as the Clinical Examination of the Blood, the Employment of Bad Nauheim Waters in Disease, Congenital Pyloric Stenosis and the Quality of Freshness in Food and amount of Light, as related to health and growth. His interests, apart from medical practice, were wide and varied, and he took a leading part in Glasgow in all questions of medical politics and public health.

He is survived by his wife, four daughters, and one son, to whom sympathy will be widely extended.

LABORATORY FOR CHILD STUDY.—The McGill University, Toronto, has given £10,000 from the Laura Spellman Rockefeller Memorial Fund to provide a child study laboratory in connexion with the Faculty of Medicine.

ENDOCRINE THERAPY.

A MEETING of the Royal Society of Medicine was held on March 31st, Sir William Hale-White being in the chair, when Dr. W. Langdon Brown opened a special discussion on Endocrine Therapy.

The Clinician's Point of View.

He said that there were five methods of administration of endocrine substances. The oral method was very uncertain except in a few cases of pituitary administration, in which it was difficult to exclude the element of suggestion. The nasal method was originally investigated as a result of the suggestion that this might be a more advantageous route for pituitary preparations since the pituitary itself was an outgrowth of the nasal mucosa. A fair degree of success had been obtained in the treatment of diabetes insipidus in this way, and there was a possibility that adrenalin also might be absorbed by this route. Rectal injection had had a measure of success in selected instances, but subcutaneous injection remained the most effective method of introducing all the substances concerned. Grafting and transplantation were still on trial; the ingrafted material was treated as a foreign body and absorbed so that the action could be but temporary. The results seemed to be better if the graft were placed in some homologous tissue, as, for instance, the insertion of adrenal grafts into the testis, which method had been known to produce a continued life in the graft for over two years. It would be of great advantage if some biochemical tests could be devised to form a standard for investigation of the action of these substances; at present there was only the basal metabolic rate and the blood-sugar. These were probably of wider application than was as yet realised, as were also the more limited tests of the tolerance to quinine hydrobromide and the calcium content of the blood. The difference of opinion between the clinician and the laboratory worker was partly due to the credulity and over-readiness of the former to acclaim untried therapeutic agents, and partly to the fact that the laboratory worker was able to reduce his problem to the simplest possible terms, so that he was liable to forget the much more complicated and delicate adjustments with which the clinician had to deal. Scepticism had even gone so far as to deny the interactions between the endocrine and autonomic nervous systems, but there seemed little doubt that the coöperation between the adrenal, thyroid, and pituitary glands on the one hand and the pancreas and parathyroid on the other, and their mutual antagonism, was supported by a considerable body of experimental evidence. It must be admitted, however, that if polyglandular therapy had a rational basis it was often very irrationally applied. It was scientific nihilism to doubt that the pharmacological reaction to adrenalin and pituitary extract were not due to the glands from which the secretions were extracted. It was easier to believe that there was some coöperation between the adrenal medulla, derived from sympathetic ganglion cells, and the sympathetic nervous system than to refuse to believe that the adrenal medulla played any part in the syndrome resulting from the administration of adrenalin or the stimulation of the post-ganglionic fibres. The thyroid was the gland most widely and most easily administered; the original doses were now known to be too large; never more than 6 gr. per diem of fresh gland extract should be given and the best commencing dose was half a grain three times a day. It was of value for children who showed a failure of growth, nocturnal enuresis, night terrors, ligamentous relaxation, &c. Parathyroid had a great function as a katabolic agent; if its normal secretion were diminished there was an accumulation of waste tissue in the body. It could be absorbed when given therapeutically, producing a great rise in the calcium content of the blood. Adrenal substance seemed to be of little use in substitution therapy; its value lay in its pharmacological action as a local anæsthetic and hæmostatic, in the reduction of spasm and in asthma. It seemed that pituitary might be absorbed by the stomach, but its value as a substitute was doubtful; it might relieve the symptoms of Fröhlich's syndrome and of adiposity, and it was valuable in diabetic conditions and as a stimulant to plain muscle and heart muscle. The use of insulin in diabetes was proved, and the impression that its administration must be for life should be strongly contradicted; many patients were able to return to normal life without the continuance of the drug. Ovarian extract had also proved its value, but the present preparations were not wholly satisfactory. It must be free from corpus luteum and might be of value in thymic asthma and transient glycosuria. Orchitic substance was more doubtful; it was as yet too soon to judge of the value of the grafting methods recently introduced.

The Physiological Aspect.

Prof. Swale Vincent said that there was a great deal to be said on the side of sanity; the present vogue of endocrine therapy was only to be compared with the indiscriminate sale of patent medicines. There should be no essential difference between the laboratory worker and the clinician. If the latter were faced with a more complicated problem to solve, that was all the more reason why he should summon all his scientific accuracy to his aid. It would be hard to find any laboratory worker who would do such bad experiments or be so shameless in publishing them as some of the endocrinologists. Every possible tissue had been hailed as a therapeutic agent and every possible mixture put on the market. In none of them, with one exception, was there more than a little, if any, evidence of any effect whatever being produced when they were taken by the mouth, unless given in sufficient quantity to serve as foods. It was justifiable to regard with great suspicion the report that any pharmacologically inactive substance was of clinical value. Thyroid extract was a very valuable drug leading to prompt and well-recognised effects when given to animals. Thyroxin was less powerful than the extract. Its value in cases of thyroid deficiency was well known and a drug which stimulated the activity of the whole body must be of value in many other conditions. It was by no means clear that any form of tetany was connected with the parathyroids except that variety which followed operations on the thyroid. The parathyroid preparations on the market were pharmacologically inactive, and it was doubtful whether they produced any effect at all when given by the mouth. In animals the tetany due to parathyroid deficiency often disappeared without any substitution therapy; it was probably due to many factors and curable by many forms of treatment. The actions ascribed to the pituitary were very likely due to the hypothalamus. The uses of pituitary extract were not those of substitution therapy. It would be rash to say that the action of adrenalin bore any relation to the adrenal body. There was no effect when given by the mouth with the possible exception of a local action on the lining membrane of the stomach. Ovarian and testicular extracts had no noticeable effects in health or disease beyond a slight irritation. The pancreas was undoubtedly responsible for an internal secretion, the failure of which led to diabetes in animals and probably in man also. Insulin might be obtained from many organs and tissues, though it seemed to originate chiefly in the islets of Langerhans. It ranked with thyroid extract as a very valuable substitution agent, best administered subcutaneously. There was yet much to be investigated; insulin had been obtained from the bodies of animals which had been de-pancreatised some weeks before and from a patient dying of diabetic coma.

Veterinary Endocrinology.

Mr. Leslie Pugh said that the use of endocrine substances in veterinary work did not differ materially from that in medical work. Pituitary was used in obstetrics and thyroid in a variety of conditions. It was found that the amount of milk produced was not altered by the administration of pituitary, but the udder was emptied more quickly, and this action was very useful in cases of cows which would yield milk to a calf but refused to do so for the milker. Milking demanded some degree of coöperation on the part of the cow, and where this was lacking, owing, presumably, to a psychic factor, a dose of pituitrin shortly before milking cured the condition. Corpus luteum extract had been used for sterility in cattle. In cases of slight puerperal infection it often happened that the animal apparently recovered, but the normal ovarian cycle was not resumed. This was found to be due to an unruptured Graafian follicle. If this was removed by rectal manipulation the œstral cycle recommenced within a few days. If it was left the chronic cystic condition combined with the suppression of the normal cycle led to an endocrine disturbance which ended in nymphomania. The combination of thyroid extract with the local manipulation had been found beneficial, especially in curing the ligamentous relaxation which accompanied the puerperal condition. In cases of mummified fœtus pituitary extract was given to expel the fœtus, but was of no use until the corpus luteum of pregnancy had been dislodged. In these cases the corpus luteum did not undergo the changes seen in the later half of a normal pregnancy; it appeared to go on functioning indefinitely, suggesting that some secretion from the fœtus or placenta might be the cause of its involution. Insulin had been used for the hyperglycæmia and ketosis of cattle.

Cases of Obesity and Defective Growth.

Dr. H. Gardiner-Hill referred to work carried out at St. Thomas's Hospital on some 150 cases of obesity and defective growth. A number of lantern-slides were shown illustrating the changes produced in the body-weight, rate of growth, and carbohydrate metabolism as a result of the administration of thyroid and pituitary extracts together, by the mouth. The whole-gland pituitary preparations alone did not reduce the weight, but seemed to increase the tolerance to thyroid. In both adolescent and adult cases the improvement had been marked and there seemed no doubt that the cases were benefited by the treatment. Posterior pituitary alone had no effect on growth.

Testicular Grafting.

Mr. Kenneth Walker confined his remarks to the effects of testicular extract and grafts. It might be said quite definitely that the oral administration of testicular extract was absolutely useless; all experiments had been negative. Experiments with grafting were rendered difficult by the scarcity of material and the necessity for careful technique to ensure vascularisation. Voronoff claimed valuable results from his work on the testes of apes, but it seemed that the improvement was rather in the nature of an increase of muscular and mental vigour and general well-being and growth of hair than any specific action on neurasthenia or sexual disabilities. Mr. Walker himself had performed transplantations with human material, using much the same technique as Voronoff and implanting the graft in a serous cavity where it was nourished by the rich exudate until vascularisation could take place. In his experience the grafts survived for two or three months, but there was degeneration of the tubules into cords and the cells regressed to an embryonic condition. Death of the graft did not necessarily mean loss of all the benefit. It might be that the secretion supplied by it tided the patient over a critical period while the compensatory function of other glands was being established. It must not be forgotten that the testis was seldom the whole seat of the trouble, there was a reciprocal involvement of other glands and structures which could not be affected by a graft. The operation of ligature of the vas deferens led to marked sexual excitement and increase in the interstitial cells of the testis. Steinach's results were impressive, as the life-period was undoubtedly increased in rats, although relapse inevitably occurred sooner or later. In man the results were much less certain; in some cases there seemed to be no benefit, in others an improvement in the general health. It was by no means certain that the internal secretion of the testis came from the interstitial cells, but this did not nullify the experiment. Mr. Walker had himself done 15 such operations, and although it was difficult to eliminate the element of suggestion it seemed that there had been improvement in 30–40 per cent. He advised the operation in paralysis agitans, as two out of five cases he had done showed marked benefit therefrom.

The debate was adjourned.

Medical News.

UNIVERSITY OF OXFORD: *Radcliffe Prize.*—On the Report of the Examiners the Radcliffe Prize has been awarded by the Master and Fellows of University College to Dr. John M. H. Campbell (Magdalen and New College). The work of Dr. Kenneth J. Franklin, Fellow of Oriel College, was highly commended. The prize is of the value of £50, and is awarded every two years for research work in medicine carried out by a medical graduate of the University.

Radcliffe Travelling Fellowship.—The Master and Fellows of University College announce that, on the Report of the Examiners, the Electors have awarded the Radcliffe Travelling Fellowship, 1925, to Dr. Kenneth J. Franklin, Fellow of Oriel College. The Fellowship is of the annual value of £300, and is tenable for two years, subject to certain conditions of travel and study abroad.

UNIVERSITY OF LIVERPOOL.—At examinations held recently the following candidates were successful:—

FINAL EXAMINATION FOR DEGREES OF M.B. AND CH.B.

Part I.—H. W. Altschul, G. S. Clouston, R. F. Corlett, D. E. Davies, R. W. Eldridge, J. H. Gilchrist, J. Halton, E. Hulme, T. A. Jermy, C. Kaufman, J. C. McFarland, E. P. Moloney, J. Morgan, H. E. Pearson, D. E. Pritchard, Thirza Redman, Mary H. Simpson, and A. K. Wilson.

Part II.—M. A. E. Azzam, B. E. Barrow, W. Howard, J. Katz, G. W. Molyneux, Mary A. Silcock, J. Tarshish, and W. L. Webb.

DIPLOMA IN MEDICAL RADIOLOGY AND ELECTROLOGY.

I. Davies, A. Gillies, A. J. Murray, and J. R. Parry.

UNIVERSITY OF DURHAM: FACULTY OF MEDICINE.—At the Convocation held on March 28th the following degrees and licences were conferred:—

BACHELOR OF MEDICINE AND BACHELOR OF SURGERY.

Joseph F. Hedley, Gwendolen Jones, Maurice H. Jones, William F. Lascelles, Harold Levy, Fenwick Lishman, Charlotte B. Schofield, and Alfred B. W. Smart.

LICENCE IN DENTAL SURGERY.

William J. Collins, John E. Daniels, Robert Moody, Hylton Park, and Ethel Robinson.

At examinations held recently the following candidates were successful:—

THIRD EXAMINATION FOR DEGREES OF BACHELOR OF MEDICINE AND BACHELOR OF SURGERY.

Materia Medica, Pharmacology and Pharmacy; Public Health; Medical Jurisprudence; Pathology and Elementary Bacteriology.—Reuben Abrahams, Harry Birk, Evelyn H. Bolt, Ethel Browell, Basil A. Dormer, and Melville M. Macintyre.

SECOND EXAMINATION FOR DEGREES OF BACHELOR OF MEDICINE AND BACHELOR OF SURGERY.

Anatomy and Physiology.—Second-class Honours: Alfred R. D. Pattison, Coley Goldstein, and James M. Tait. Pass: Hugh M. Brown, David S. Buchanan, William F. Cross, William C. E. Diamond, Ernest A. H. Hindhaugh, James C. V. Hindhaugh, James H. Hudson, Thomas L. Kelly, Harold G. Ungley, and Nora Walkinshaw.

EXAMINATIONS FOR THE LICENCE IN DENTAL SURGERY.

First Examination (New Regulations).—*Organic Chemistry; Biology; Dental Mechanics (Theoretical), and Dental Metallurgy (Theoretical and Practical).*—Thomas H. Brown.

Second Examination (Old Regulations).—*Dental Mechanics; Dental Metallurgy.*—Jack Abrahams, John Auton, Reginald H. Chapman, and Arthur J. Jackson.

Third Examination (Old Regulations).—*Anatomy, Physiology, and Histology; Dental Anatomy, Dental Histology, and Dental Materia Medica.*—Philip W. Eddy.

UNIVERSITY OF DUBLIN, SCHOOL OF PHYSIC, TRINITY COLLEGE.—At examinations held recently the following candidates were successful:—

FINAL MEDICAL EXAMINATION.

Part I., Materia Medica and Therapeutics; Medical Jurisprudence and Hygiene; Pathology and Bacteriology.—*Robert A. Q. O'Meara, *James W. Bowden, *Jack M. Selkon, *Robert E. Hadden, *Thomas J. W. Keown, *John H. M'Lean, John J. O'Dwyer, George W. H. Townsend, Arthur B. Brooks, Johan N. S. Gouws, Myer Hoffman, Cicero G. Nel, Kathleen I. Purdy, Derek St. C. Mackenzie, Gerald O. Taylor, Edward A. Ellis, Gladys L. Craig, Daniel J. Roux, John Johnston, Christina M'Donald, Rachel E. Porter, and John Quigley.

Part II., Medicine.—*Thomas W. MacDowell, Charles F. D. M'Caldin, William C. Somerville-Large, Kathleen D. Murison, George F. Gillespie, Edward M'Alpine, Wilfred H. Anderson, O'Donel T. D. Browne, Joseph R. Gregory, Richard T. Cronin, James Dick, Thomas C. Foster, Paul N. H. Labuschagne, William B. Rountree, Frederick M. Purcell, Norman M. Greeves, François J. Marais, Annie T. Deane, Francis H. M'Kenna, John V. Morris, Robert W. Harte, John Cussen, Gordon P. Bamford, Oliver Chance, William P. E. M'Intyre, Augusta M. Young, William Gallaugher, John L. Levingston, James L. Marshall, Mary Galvin, Francis V. Duke, Christopher Lord-Flood, John A. MacDonnell, Robert A. Heatley, Jerreth Horwich, Harry Nelson, and Ahmed A. Shaik.

Surgery.—*Edward M'Alpine, Roy K. Carson, William A. Redmond, Richard T. Cronin, John A. MacDonnell, Lewis C. Brough, Eric T. S. Rudd, Edward S. A. Crawford, Thomas G. B. Crawford, Frederick M. Purcell, Herbert W. Strong, John M. Johnston, Charles J. du Plessis, Edmund J. Walsh, John E. Beatty, John Crawford, François J. Marais, Leslie M. Whitsitt, Edward A. Bennet, Raymond J. G. Hyde, John O. Maguire, Godfrey W. Garde, William C. G. Potts, Cecil R. Moore, Herbert Birney, Robert V. Franklin, Robert A. Heatley, and Israel Strasburg.

Midwifery.—*Charles R. Rowland, *John F. Wilde, *Robert L. Forsyth, *Elias Rakoff, Elspeth V. D. Hewat, Francis H. M'Kenna, John E. Stokes, Geoffrey D. Edwards, Ahmed A. Shaik, Maurice Sherowitz, Philip B. Robinson, Barend P. Pienaar, Margaret W. Pike, Launcelot W. R. Haskins, Charles E. M'Causland, Wilfred Sinclair, Mary Galvin, Henrietta Armstrong, John E. Beatty, and Wolsey C. Sloan.

Master in Surgery.—Daniel de Bruijn.

Master in Obstetric Science.—David J. Malan.

* Passed on high marks.

INTERMEDIATE DENTAL EXAMINATION.

Anatomy and Physiology.—Andrew A. Gardner, Robert W. Mather, John H. O'Hare, and George M. Titterington.

DIPLOMA IN GYNÆCOLOGY AND OBSTETRICS.

Elizabeth N. Thompson.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—Sir Arbuthnot Lane, the President of the Fellowship of Medicine, will preside at the continued discussion on Post-Graduate Study in London, to be held at the house of the Royal Society of Medicine, 1, Wimpole-street, London, W., on Wednesday, April 8th, at 6 P.M. It is hoped that members of the medical profession who are able to attend will do so and will voice their views for the improvement and extension of post-graduate work.

ROYAL COMMISSION ON NATIONAL HEALTH INSURANCE.—The twenty-third meeting of this Commission was held at the Home Office, Whitehall, on March 26th, Sir Andrew Duncan in the chair. Evidence was given on behalf of the Federation Committee of English, Scottish, and Welsh Insurance Committees by the Rev. W. D. Yoward, vice-chairman, Mr. Edwin Potts, hon. secretary, Mr. W. M. Marshall, ex-chairman, and Mr. F. Llewellyn Jones, chairman of the Federation, the administrative work of the Insurance Committees and questions of the extension and improvement of medical and treatment benefits being fully dealt with. Thereafter Mr. Marshall gave evidence on the features peculiar to Scotland and Mr. Llewellyn Jones on the Welsh position. Mr. Eynon Lewis then gave evidence on behalf of the Glamorgan County Insurance Committee with special reference to the South Wales Medical Institutes. The Commission announce that proof copies of the oral evidence and the relative statements submitted at the meeting of March 12th are now on sale at H.M. Stationery Office (3*s.*).

NATIONAL ASSOCIATION FOR THE PREVENTION OF TUBERCULOSIS.—The Eleventh Annual Conference of the Association will be held in London on Monday and Tuesday, July 6th and 7th. The main object under consideration will be Tuberculosis in Childhood, and the address introductory to the discussion will be given by Prof. Pirquet, of the University of Vienna. The afternoon of the second day (July 7th) will be devoted to addresses on the Treatment of Tuberculosis by Sanocrysin, by Prof. Holger Möllgaard, Professor of Physiology, Royal Veterinary and Agricultural College, Copenhagen, and Prof. Knud Faber, of the University of Copenhagen. The meetings will be held at the Robert Barnes Hall (Royal Society of Medicine), 1, Wimpole-street, W. 1. The conference is open to all persons interested in tuberculosis on payment of a fee of one guinea, which includes a copy of the report of the proceedings. The Council of the Association announces that the Minister of Health will be prepared to sanction under the Local Authorities (Expenses) Act the payment of the reasonable expenses of not more than three delegates, among whom should be included the medical officer of health or chief clinical tuberculosis officer, or both, from county councils, county borough councils, joint tuberculosis committees, and metropolitan borough councils. Further particulars may be obtained from the Secretary at 20, Hanover-square, London, W. 1.

THE LATE MR. JAMES TAYLOR.—The death occurred at his residence in Clifton, Bristol, on March 22nd, of Mr. James Taylor, M.R.C.S., L.S.A., who was the son of a well-known Bristol surgeon. Mr. Taylor qualified some 50 years ago and was one of the first medical men in Bristol to become interested in Röntgen rays. During the war he was a captain in the R.A.M.C. (Territorials), and was radiologist to the Bristol Royal Infirmary, where at the time of his death he was consulting radiologist. Mr. Taylor made many friends and was beloved by all his patients, though ill-health of recent years prevented his attendance on any but those whom he had known for many years. Keenly interested in everything that concerned Bristol, he took a prominent part in many local movements; he was a good sportsman and an enthusiastic Freemason.

LISTERIAN SOCIETY.—The Listerian Society of King's College Hospital met under the presidency of Mr. C. P. G. Wakeley on March 24th, for the purpose of conducting a trial in accordance with the rules of legal procedure. The charge was one of manslaughter, and the counsel for the defence was Mr. J. Forster, of the Inner Temple, and the prosecution was conducted by Miss Llewelyn Davies, of the Inner Temple. The conduct of the medical aspects of the charge was under the direction of the Sambrooke Registrars, Dr. Livingston and Mr. A. C. Edwards. Mr. Justice McCardie was the judge, and greatly contributed to the proceedings by a learned summing-up dealing with the law on the subject. As a means of learning court procedure and securing confidence in giving evidence the proceedings of the evening were admirably adapted to be useful and instructive to the students, who warmly expressed their appreciation of the presence of the judge after an exacting day in the Royal Courts of Justice.

THE LATE DR. A. W. BEAUMONT.—Albert William Beaumont, who died on March 26th in his seventy-first year, was a well-known practitioner in East Ham. He graduated in Arts at the University of Cambridge in 1877, and then turned to the study of medicine at St. Mary's Hospital Medical School, and later in Dublin. He qualified L.S.A. in 1882, L.R.C.S. & L.M. Edin. in 1883, and M.D. Dub. in 1898. He practised for a time in Cambridge, in 1886 moved to Beckton, and later to East Ham, where for 22 years he was medical officer of health, and for nearly 30 years surgeon to the West Ham Guardians. He was also consulting surgeon to the East Ham Cottage Hospital. He was surgeon to the Gas Light and Coke Company for 39 years. Dr. Beaumont leaves a widow and two sons, both of whom follow their father's profession, and two daughters.

CONGRESS OF OBSTETRICS AND GYNÆCOLOGY.—The fifth British Congress of Obstetrics and Gynæcology will be held in London at the rooms of the Royal Society of Medicine, from April 22nd to 24th inclusive, under the presidency of Dr. Russell Andrews. The constituent societies of the congress are the Section of Obstetrics and Gynæcology of the Royal Society of Medicine, the Edinburgh Obstetrical Society, the North of England Obstetrical and Gynæcological Society, the Midland Obstetrical and Gynæcological Society, the Section of Obstetrics and Gynæcology of the Royal Academy of Medicine, Dublin, and the Ulster Medical Society. Prof. W. Blair Bell, Dr. R. W. Johnstone, Sir Ewen J. Maclean, Dr. T. W. Eden, and Mr. T. G. Stevens form the Executive Committee, the last two being respectively the chairman and treasurer. Prof. J. Whitridge Williams, of Baltimore, and Prof. W. W. Chipman, of Montreal, will be the official guests. In addition to the president, the chairmen of the various sessions will be Dr. J. E. Gemmell, Prof. B. P. Watson, Prof. T. Wilson, and Dr. L. L. Cassidy, and communications will be made by Dr. Gibbon FitzGibbon, Prof. J. Munro Kerr, Dr. J. W. Bigger, Dr. L. P. Lockhart, Prof. J. H. Teacher, Dr. Bethel Solomons, Prof. A. Donald with Dr. K. V. Bailey, Dr. Wilfred Shaw, Dr. G. I. Strachan, Dr. Malcolm Donaldson, Dr. Agnes Bennett, Prof. Louise McIlroy, and Dr. E. P. Williams. On Wednesday, April 22nd, there will be a luncheon at Pagani's Restaurant given by the Section of Obstetrics and Gynæcology of the Royal Society of Medicine, and on the same evening at 9 o'clock the President and Mrs. Russell Andrews will entertain members of the congress and their friends in the rooms of the Royal Society of Medicine. The congress dinner will be held at the Criterion Restaurant on the evening of Thursday, April 23rd. Arrangements have been made with the principal hospitals for members of the congress to be present at operations, and a pathological exhibition will be held. The hon. secretaries are Mr. Clifford White, 62, Harley-street, W. 1, and Mr. J. Barris, 50, Welbeck-street, W. 1, and advance copies of the reports from the various bodies on the Prognosis and Treatment of Puerperal Sepsis can be obtained from Mr. Clifford White if application is made before April 10th.

Rebuilding of Middlesex Hospital.—The rebuilding of this great hospital on its present site will cost about half a million, and it is intended next month to launch "the largest appeal ever made in this country for any single hospital." The new building will include a paying patients' wing and greatly enlarged and improved accommodation for the nursing staff, which numbers nearly 200.

Rontgen Society.—A general meeting of this society will be held on Tuesday, April 7th, at 8.15 p.m., in the British Institute of Radiology, 32, Welbeck-street, London, W. Mr. R. Craig Rodgers will read a paper on the Organisation and Equipment of X Ray Rooms arranged for Private Radiologists, and Mr. G. T. Loughborough will read a paper on Acute X Ray Burns The eighth Silvanus Thompson Memorial Lecture will be delivered by M. Le Duc de Broglie, Paris, during the International Congress of Radiology, to be held next July, and the Mackenzie Davidson Memorial Lecture will be delivered by Sir Berkeley Moynihan, also at a meeting to be held during the International Congress.

The Local Government Act, Ireland.—The Local Government Act became law last week, having been under discussion in the Oireachthas for nearly a year. It makes notable changes in the machinery of local government in the Free State. The county is now to be the only unit for administration and sanitary purposes. The rural district councils are abolished. From the medical point of view the most important provision of the Act is that for the appointment of a medical officer of health for each county area. Certain changes are also made in the laws regarding pensions of officers of local authorities, but medical officers are not injuriously affected. Among the statutes repealed by the present Act is the Ministry of Health Act (Ireland), 1919, and with it goes the Irish Public Health Council.

Donations and Bequests.—Mrs. Elizabeth Shaw, of Kensington, W., and Newbury, Hants, left by will £1000 to St. Bartholomew's Hospital and £1000 to the Hospital for Incurables, Putney.—Mr. Robert Meggitt, Uplands, Richmond, Surrey, bequeathed £5000 to Richmond Royal Hospital. The testator also directed that £15,000 be divided among the Royal Hospital for Incurables, Putney Heath, King Edward's Hospital Fund, London, the London Hospital, London Orphan School, Watford, and Dr. Barnardo's Homes. He also left £500 for distribution among the poor of Richmond.—At the annual meeting of University College, London, it was announced that Mr. Geoffrey Duveen, in addition to his generous gift of £15,000 of last year, had given £50,000 for the construction and equipment of a new Royal Ear Hospital, which will contain 12 beds for in-patients and ample room for the treatment of out-patients, and will embody all the latest improvements in hospital construction and equipment.—Under the will of Mrs. Jane Lewis, of Hackney, in accordance with the views of the testatrix, £22,000 will be devoted to the erection of a new wing to the Royal Victoria Eye and Ear Hospital, Dublin.—The widow of Mr. Tetley, a director of Courtauld's, Ltd., in fulfilment of her husband's desires, is distributing £40,000 amongst the charities in Leigh, Flint, and Coventry, and other places where Courtauld's had works. The treasurer of Leigh Infirmary has received £1000 from the fund for the infirmary, and £1000 for Leigh Sick Nursing Association.—Representatives of the trustees of the Treloar Cripples' Home, Alton, on Feb. 20th received at Portsmouth a cheque for £10,000, being the amount raised in the town for the establishment of a ward for the treatment of Portsmouth's 500 crippled children.—Lord Bledisloe is giving one half of his salary as Parliamentary Secretary to the Ministry of Agriculture to the Lydney and District Cottage Hospital.—Bradford Woolcombers, Ltd., are contributing £13,000 towards the building fund of the contemplated new Bradford Royal Infirmary.—Sir Louis Pearson, who has just retired from the presidency, has promised £5000 towards the extension fund of the Nottingham General Hospital.—Princess Louise has made a donation of £1000 to the Princess Louise Hospital for Children, Kensington.—Lord Leverhulme has sent a donation of £1000 in connexion with the appeal to rebuild the Kensington, Fulham, and Chelsea General Hospital.—Mr. Daniel Henry Shilson, of St. Austell, Cornwall, left, among other bequests, £1000 each to the Royal Cornwall Infirmary and the St. Austell Nursing Association.—The Government of Sierra Leone has sent £500 towards the funds which are being raised for the foundation of the Ross Institute and Hospital for Tropical Diseases.—The Chelsea Hospital for Women has received a donation of £100 from the Westminster Bank, Ltd., acting in the distribution of the charitable bequests of the late Mr. George Macbain.—The Royal Medical Benevolent Fund Guild gratefully acknowledges a donation of £200 from Mr. George Macbain, deceased, per Westminster Bank, Ltd.

THE BATEMAN APPEAL.

As already explained in The Lancet, it has been felt that material assistance ought to be offered to Dr. Bateman to meet the legal expenses of his recent successful appeal against conviction and to make good the deficiency in his professional income. Accordingly, the Bateman Fund has been opened and lists of contributions have appeared in recent issues. We have received additional contributions as follows:—

	£	s.	d.
Already received and acknowledged	101	19	0
Prof. A. L. McIlroy	5	5	0
Prof. W. Blair Bell	3	3	0
Dr. L. Franklin	3	3	0
Anonymous	2	2	0
Dr. F. A. M. Flegg	1	1	0
Dr. F. S. D. Hogg	1	1	0
Dr. G. Hollings	1	1	0
Dr. J. Macdonald	1	1	0
Dr. W. W. Maxwell	1	1	0
Dr. H. P. Miller	1	1	0
Dr. H. T. Nixon	1	1	0
Dr. C. E. Silvester	1	1	0
Dr. J. H. Waddington	1	1	0
Dr. R. S. Corey	0	10	6
A. M. W.	0	10	0
Dr. H. S. Hollis	0	2	6

Remittances should be forwarded to the Manager of The Lancet, 423, Strand, W.C. 2, and made payable to the "Bateman Fund Account."

Parliamentary Intelligence.

HOUSE OF LORDS.

Tuesday, March 31st.

Dogs Protection Bill.

Lord **Banbury**, in moving the second reading of the Dogs Protection Bill, said that a similar measure had three times passed the second reading stage in the House of Commons, and on one occasion was reported to the House from a Standing Committee without amendment. The passing of the Bill would in no way prevent experiments from being made on other animals; all it would do was to prevent them from being made on dogs. He was aware that very many medical men were against the Bill, but on the other hand many were in favour of it. The use of dogs in vivisection was unnecessary.

Viscount **Knutsford**, in moving the rejection of the Bill, said he did not suppose the whole medical and surgical world had ever been so unanimous on any subject as it was on this question. They were all reluctant to use dogs for experiments, but they were compelled to do it because it was necessary for the advance of knowledge. Sir Frederick Treves, who was always quoted at anti-vivisection meetings, wrote: "No one could be more keenly aware than I am of the great benefits conferred on suffering humanity by certain researches carried out by means of vivisection." Diabetes was no longer a sentence of death on young boys and girls, and was no longer an intolerable burden on adults, thanks wholly and solely to experiments on dogs.

Lord **Lambourne** supported the Bill.

Lord **Mildmay of Flete**, who opposed the Bill, said only last Friday he presided over the Medical Research Council in the absence of Lord Balfour, and he had been authorised to make known how strong and unalterable was the objection of its members to this Bill as likely seriously to impede the progress of medical science and greatly to retard the successful treatment of disease. His experience on the Medical Research Council, and in connexion with the management of the Middlesex Hospital, had convinced him that in no walk of life were to be found more admirable qualities and beautiful characters than those engaged in medical research.

Lord **Rayleigh** said some persons thought that a respectable minority of the medical profession were in favour of the Bill. He had had an opportunity of going through the names which the noble lord had brought forward a year ago as being on his side, and so far as he had been able to learn not one of those men had ever made a discovery of any kind.

Lord **Buckmaster** said their lordships ought to hesitate a very long time before they attempted to limit the area of investigation into the means by which it might be possible to extend the wide boundaries of the great empire of learning, to check the progress of disease, and even to stay the swift and stealthy foot of death.

Lord **Desborough** said the Home Office were as opposed to the Bill now as they were last year.

The Bill was rejected by 77 votes to 8.

HOUSE OF COMMONS.

WEDNESDAY, MARCH 25TH.

Women Doctors in the Civil Service.

Miss **WILKINSON** asked the Chancellor of the Exchequer whether there were any classes of men and women civil servants in receipt of equal pay; and, if so, why the principle was applied in some cases and not in others.—Lieut.-Col. W. **GUINNESS** (Financial Secretary to the Treasury) replied: There are a few medical posts in the Civil Service in which men and women doctors receive the same rate of pay. In these cases special circumstances exist and no general principle has been applied.

Food Preservatives.

Mr. **MACKENZIE LIVINGSTONE** asked the Minister of Health if he was aware that in the draft Rules of March 17th, 1925, on preservatives in foods there was a list of prohibited coal-tar products which gave the impression that all other such products might be used; and would he take steps to lay down the quantities of lead and arsenic permitted in such compounds, and thus carry out the recommendations of the committee.—Sir **KINGSLEY WOOD** replied: Yes, sir. The effect of the regulations, as drafted, is that all coal-tar colours which are not included in the schedule may be used in food until they are shown to be injurious to health. Although lead and arsenic are occasionally present in coal-tar products, my right hon. friend is advised that the percentage of those substances liable to be introduced into foodstuffs through this medium is so minute that it is unnecessary to extend the scope of the regulations in the direction suggested.

Mr. **GERALD HURST** asked the Minister of Health whether he was aware of the alarm occasioned to the confectionery, bakery, and allied trades by the draft regulations as to the use of preservatives and colouring matter in articles of food; whether he was aware of the strong scientific evidence published against prohibition of boric acid and against the new rules as to liquid eggs, butter, margarine, and cream; and if the regulations could be held up until the House could consider their propriety.—Sir **KINGSLEY WOOD** replied: My right hon. friend has received representations from these trades and I am arranging to meet a deputation. My right hon. friend is satisfied that the scientific evidence regarding the effect of boric acid was thoroughly considered by the Departmental Committee on Preservatives in Food. My right hon. friend is desirous of giving the fullest consideration to the views of all parties concerned, and thinks the hon. Member will agree that that end will be secured by the discussion of the draft with representatives of trade bodies and others before the regulations are made and laid before Parliament.

THURSDAY, MARCH 26TH.

Maternity and Child Welfare Centres.

Mr. **BENJAMIN SMITH** asked the Minister of Health what progress had been made as regards the establishment of new maternity and child welfare centres since the issue of the circular of Feb. 8th, 1924, by the late Government.—Mr. N. **CHAMBERLAIN** replied: Since the issue of the circular of Feb. 8th, 1924, the number of maternity and child welfare centres in England known to my department has increased from 1980 to 2112, and proposals for about 30 additional centres are under consideration. Additional sessions for infant consultations, antenatal work, massage, &c., have also been provided at 95 existing centres.

Penalties on London Panel Doctors.

Mr. **HERBERT WILLIAMS** asked the Minister of Health why penalties of £10 and £20 respectively were imposed on two doctors who had been accused by the London Insurance Committee of gross negligence in cases of appendicitis and diphtheria, respectively, but who had been found innocent by a committee appointed by the Ministry of Health.—Mr. N. **CHAMBERLAIN** replied: As misapprehension has arisen regarding these cases I will state the facts fully. The death of two insured persons in London in 1924 led to complaints being lodged with the London Insurance Committee in regard to the treatment received by them from the two insurance practitioners concerned. These complaints were investigated by the Medical Service Subcommittee of the Insurance Committee which, with the concurrence of its medical members, recommended that in both cases a substantial deduction should be made from the doctors' remuneration. The Insurance Committee itself, however, regarded the cases as cases of gross negligence and accordingly made representations to me under the regulations for the removal of both doctors from the Medical List. These representations necessitate the appointment of an Inquiry Committee. That Committee, consisting of a barrister and two medical practitioners, found that the allegation of "gross" negligence was not established in either case, but their findings of fact indicated that in one case the doctor had failed to exercise reasonable care, and that in the other case the doctor had failed to respond to a request to visit the patient at what proved to be a critical period in the illness. After careful consideration of the reports of the Committee, I came to the conclusion that while the facts established were not such as to warrant the removal of either practitioner from the Medical List, there was abundant ground for the original recommendation of the Medical Service Subcommittee that grant should be withheld. My hon. friend will see from the above that there is no ground for the statement that the practitioners were found innocent. I may add that the procedure followed in these cases presents no exceptional features but follows the practice of the Insurance Commissioners and of previous Ministers of Health.

Standard of Condensed Milks.

Mr. **GROVES** asked the Minister of Health the terms of any order issued by his department regulating the standard of quality for imported condensed milk.—Mr. N. **CHAMBERLAIN** replied: The Public Health (Condensed Milk) Regulations, 1923, require that full-cream condensed milk must contain 31 per cent. of milk solids including 9 per cent. of milk fat, and that skimmed condensed milk must contain 20 or 20 per cent. of milk solids according as it is sweetened or not.

Livestock Depôt at Barnet.

Lieut.-Col. **FREMANTLE** asked the Minister of Health if his attention has been drawn to the serious nuisance occasioned by the establishment in the old posting-stables at Barnet of a livestock depôt immediately adjoining a street of small houses; whether he was aware that as many as 600 monkeys had been confined on the premises at a time and that several had escaped into neighbouring houses and gardens, to the alarm and great possible danger to the mental health of the inhabitants; and whether he would take action to secure the protection of the people of Barnet from this standing menace.—Mr. N. **CHAMBERLAIN** replied: I am communicating with the District Council on the subject mentioned by my hon. and gallant friend. I may mention that the model by-laws prepared by my department for preventing the keeping of animals in such a way as to be injurious to health do not apply to monkeys, but there is no reason why local by-laws should not include these animals if necessary.

Treatment of Tuberculosis.

Mr. W. C. **ROBINSON** asked the Minister of Health what increased provision for the treatment of tuberculosis had been made since the issue of the circular of Feb. 8th, 1924.—Mr. N. **CHAMBERLAIN** replied: Since the issue of the circular of Feb. 8th, 1924, proposals for the provision of more than 1300 additional beds have been approved. In addition, local authorities have been authorised to take additional beds at institutions belonging to voluntary bodies, and to carry out other developments of their tuberculosis schemes. The number of persons under treatment in residential institutions has increased by nearly 1300 since Feb. 1st, 1924, whilst the total net expenditure by local authorities which is about to be authorised for 1925-26 is £100,000 in excess of the estimated net expenditure during the current year. The figures quoted relate to England only.

National Health Insurance Surplus.

Major **WHELER** asked the Minister of Health whether, seeing that the unspent accumulated insurance funds amounted to nearly £100,000,000 for England under the National Health Insurance Act why it was necessary to have so large a sum in reserve.—Mr. **BENNETT** asked a similar question.—Mr. N. **CHAMBERLAIN** replied: The need for the reserves referred to by the hon. Members arises from the fact that the liabilities under the system of National Health Insurance increase with the age of the insured persons, while the contributions in all cases are at fixed rates payable from age 16 to age 70, and are actuarially calculated to be sufficient for a person entering into insurance at the age of 16. The question where funds accumulate in particular cases in excess of requirements is determined by the quinquennial valuations made under the Act. Where disposable surpluses appear, the societies are authorised to distribute them in additional benefits under schemes confirmed by my department. On the last valuation over £6,000,000 of surplus funds was so dealt with, and it is expected that on the valuation now in progress a considerably greater sum than this will be made available for distribution.

Segregation of Infectious Patients.

Colonel **DAY** asked the Minister of Health if he would consider appointing a court of inquiry to investigate and report on the prevailing conditions of the public health service of the country, and to inquire especially into the compulsory segregation of persons seriously affected with tuberculosis and in an infectious and incurable condition; and would he take steps to provide adequate protection to the children and near relatives of such persons who, through lack of housing accommodation, were forced to live in close proximity to such persons.—Mr. N. CHAMBERLAIN replied: As at present advised I see no necessity for such an inquiry as is suggested. As regards the compulsory segregation of persons suffering from tuberculosis and in an infectious state, I may point out that legislation on this subject has already been obtained by a number of local authorities, and possibly an opportunity of dealing with the matter generally, as has been recommended by the local legislation committee, may occur in connexion with the Public Health Bill which secured a second reading on Friday last. As regards the last part of the question, it is for the local sanitary authorities to take all such steps as are practicable to prevent the spread of infection.

Royal Commission on Mental Disorders.

Captain WATERHOUSE asked the Minister of Health when the Report of the Royal Commission on Mental Disorders might be expected.—Mr. N. CHAMBERLAIN replied: It is not possible at this stage to state when this Report may be expected, but I understand that the Royal Commission hope to be in a position to present their Report early next year.

The Bastardy Bill.

Captain BOWYER asked the Prime Minister whether he would give facilities for the Second Reading of the Bastardy Bill.—Mr. BALDWIN replied: The Government do not propose to grant special facilities for this Bill.

Insanitary Houses in West Ham.

Mr. GROVES asked the Minister of Health whether he would cause special inquiries and efforts to be made in respect to the condition of houses within the county borough of West Ham, inasmuch as it was the common feature of the town council to receive reports monthly from its chief sanitary and medical advisers indicating that over 75 per cent. of the houses examined were found to be not in all respects reasonably fit for human habitation, and for the year 1923 of 11,207 houses so examined 8380 were in such a state that notices were required to be served upon the owners or rack-renters; and would he consider whether special action was necessary.—Mr. N. CHAMBERLAIN replied: I am aware of the conditions in this borough. The local authority are making active use of their powers under the Public Health Acts, and I understand that they are considering whether action should be taken in particular cases under Section 28 of the Housing, Town Planning, &c. Act, 1919, as amended by Section 10 of the Housing, &c. Act, 1923. These existing powers should, I think, prove to be sufficient.

Certification of Death.

Lieut.-Col. FREMANTLE introduced a Bill to amend the law relating to the certification of deaths, which was read a first time.

MONDAY, MARCH 30TH.

Vaccine and Serum for Pig Erysipelas.

Lieut.-Col. FREMANTLE asked the Minister of Agriculture if his attention had been called to the value of the specific vaccine and serum, at present only obtainable from the continent; for the prevention of pig erysipelas; and if he would arrange for this remedy to be stocked by veterinary surgeons throughout this country.—Mr. WOOD replied: The reply to the first part of the question is in the affirmative. I would point out that for the last 20 years the Ministry has issued a leaflet on swine erysipelas which, among other things, describes vaccine and serum treatment. I understand that at present supplies are only obtainable from the continent, because the demand has not been such as to encourage firms in this country to stock the material. I have no power to arrange for this remedy to be stocked by veterinary surgeons throughout the country, but no doubt veterinary surgeons and firms will do so, if pig owners will show them that there is a sufficient demand.

Import of Arsenic from Japan.

Captain MORRING asked the President of the Board of Trade what quantities of arsenic were imported into the United Kingdom from Japan during the months of December, 1924, and January and February, 1925.—Mr. A. M. SAMUEL (Parliamentary Secretary to the Overseas Trade Department) replied: The quantity of white arsenic and other arsenic compounds imported into Great Britain and Northern Ireland, and registered as consigned from Japan, amounted to 51 tons in December, 1924, 104 tons in January, 1925, and 51 tons in February, 1925. There were no imports of metallic arsenic during the months in question.

The Lee Commission and Indian Provincial Services.

Mr. WARDLAW-MILNE asked the Under Secretary of State for India whether any decision had been come to with regard to the claims of those members of the provincial services who had retained their non-Asiatic domicile to have extended to them the benefits conferred on their colleagues in the covenanted services by the Act of 1919 and by the Report of the Lee Commission, in so far as these latter had been adopted; and whether, in the event of the matter not having been decided, due attention would be paid to the recommendations on the subject contained in the letter from the Viceroy of India to the Secretary of State for India, dated Delhi, March 5th, 1919, and in the Report of Lord Southborough's Committee.—Earl WINTERTON replied: My noble friend is considering the position of the officers to whom my hon. friend draws attention, and in making his decision will bear in mind the papers referred to.

Permanent Appointments to Pensions Medical Staff.

Colonel DAY asked the Minister of Pensions what was the name and rank of those members of the medical staff of the Ministry who had been given permanent appointments; what increase had been made in their salary; and whether other temporary officers of the Ministry who were given established posts would receive a similar relative salary.—Major TRYON replied: It is intended to recommend 18 members of the existing whole-time temporary medical staff for permanent appointments, but no such appointments have yet been made. The successful candidates will enter their new posts at their existing rates of pay, subject, in a few cases, to certain slight adjustments, up or down, which may be made in order to remove existing anomalies. In regard to the last part of the question, the terms and conditions governing the grant of established posts to other classes of temporary employees of the Ministry will necessarily be those laid down for such classes in Government departments.

Boron Preservatives in Food.

Mr. GOODMAN ROBERTS asked the Minister of Health (1) whether he was in possession of any evidence that the small quantities of boron preservatives permitted to be used in liquid eggs was deleterious to health; and, if so, would he state its nature; and (2) whether it had been decided to prohibit the use of boron preservatives in liquid eggs; and whether, before issuing regulations on this matter, he would consider the probable increased cost of important foodstuffs into the composition of which eggs enter, seeing that there was no adequate provision for cold storage in this country to make cold-storage eggs a practical substitute for liquid eggs.—Mr. N. CHAMBERLAIN replied: The effect of boron preservatives was considered by the departmental committee on the use of preservatives in food, and they were unanimously of opinion that such preservatives are sufficiently harmful to justify their total prohibition. I have not yet settled the final form of the regulations, and before doing so I shall certainly give full weight to such considerations as those mentioned by the hon. Member.

TUESDAY, MARCH 31ST.

Chemical Warfare Tests on Soldiers.

Mr. DUNNICO asked the Secretary of State for War whether, with regard to the fact that at the camp of the chemical warfare research department at Salisbury Plain experiments were being carried out to test the relative effects of poison gas on soldiers, he would say whether any men subjected to these tests had been seriously and permanently injured in their lungs and otherwise, and whether he was prepared to put a stop to such experiments.—Sir L. WORTHINGTON-EVANS replied: No men have suffered injury to their lungs or otherwise through being subjected to these tests. The answer to the second part of the question is in the negative.

Mr. AMMON asked the Secretary of State for War with regard to the experiments as to the effect of poison gases on young soldiers which were conducted at the chemical warfare research department, the number of such experiments, and the number of young soldiers engaged in them since 1918.—Sir L. WORTHINGTON-EVANS replied: The number of such experiments since 1918 is 372 and the number of soldiers engaged in them 188. All these soldiers voluntarily offered themselves for this special duty.

Mr. AMMON asked the Secretary of State for War the nature of the experiments conducted at the chemical warfare research department by subjecting young soldiers to the effects of poison gases; what precautions were taken to prevent such experiments resulting in injury to the young soldiers concerned; and the number of young soldiers who had been injured in their lungs and otherwise since 1918.—Sir L. WORTHINGTON-EVANS replied: The experiments fall under three categories: (1) exposure to low concentrations of gases to ascertain their physiological properties; (2) exposure to gas of personnel protected by respirators in order to test the protective efficiency of the respirators; (3) tests on skin of human personnel of new compounds to ascertain their irritant action, if any. All such experiments have been carried out under most stringent regulations which have been framed on the best medical advice obtainable, in order that the health of the observers concerned may be safeguarded. There have been no cases in which injury to the lungs or otherwise has been caused to soldiers since 1918.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Monday, April 6th.

WAR: at 4.30 P.M.
Annual General Meeting:
Election of Officers and Council for Session 1925–26.
Papers:
Colonel J. Crawford Kennedy, R.A.M.C.: Tuberculosis in the Army.
Surgeon-Commander C. H. Dawe, R.N.: Tuberculosis in the Navy.
Wing-Commander H. A. Treadgold, R.A.F.: Tuberculosis in the Royal Air Force.

Tuesday, April 7th.

ORTHOPÆDICS: at 8.30 P.M.
Discussion:
Differential Diagnosis of Non-Tuberculous Coxitis in Children and Adolescents.
To be opened by
Mr. Alan Todd, followed by Mr. R. C. Elmslie and Mr. H. A. T. Fairbank (President).

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.
MONDAY, April 6th. 12 noon, Mr. Simmonds: Applied Anatomy. 2 P.M., Mr. Addison: Surgical Wards. 2 P.M., Dr. Scott Pinchin: Medical Out-patients.
TUESDAY.—10 A.M., Medical Registrar: Clinical Methods. 12 noon, Dr. Burrell: Chest Cases. 2.30 P.M., Mr. Tyrrell Gray: Surgical Wards.
WEDNESDAY.—2 P.M., Dr. Burnford: Medical Wards. 2 P.M., Dr. Owen: Medical Out-patients. 2.30 P.M., Mr. Donald Armour: Surgical Wards.
THURSDAY.—11 A.M., Sir Henry Simson: Gynæcological Wards. 12 noon, Mr. Sinclair (Lecture): Abdominal Surgery. 2 P.M., Mr. MacDonald: Genito-Urinary Dept.

MANCHESTER ROYAL INFIRMARY.
TUESDAY, April 7th.—4.15 P.M., Mr. W. R. Douglas: Benign Swellings of the Breast.

Appointments.

DODDS, R. L., M.B., B.Ch. Belf., has been appointed Resident Medical Officer to the *Freemasons Hospital and Nursing Home*, Fulham-road, S.W.

FFRENCH, E. G., M.D., F.R.C.S.E., M.R.C.P. Lond. (Lieut.-Colonel R.A.M.C., retd.), Dermatologist to the London Temperance Hospital.

MACLENNAN, N. M., M.B., Ch.B. Aberd., *D.P.H.*, Assistant Medical Officer of Health, Woolwich.

MCMILLAN, KENNETH, F.R.C.S. Eng., Hon. Surgeon to the Birmingham and Midland Hospital for Women and Hon. Assistant Surgeon to the Birmingham Maternity Hospital.

MOORE, FREDERICK CRAVEN, M.Sc., M.D., F.R.C.P., to the *Chair* of Systematic Medicine in the University of Manchester.

SINCLAIR, A. H. H., M.D., C.M., F.R.C.S. Edin., a Medical Referee under the Workmen's Compensation Act, in place of Sir George A. Berry, who has resigned.

THACKRAY, C., M.D., B.S. Lond., Medical Superintendent of St. Pancras Guardians' Highgate Infirmary.

Queen Charlotte's Maternity Hospital: STORY, A. G., M.B., B.Ch., Resident Medical Officer; SAUNDERS, ROY M., M.B., Ch.B. Edin., and FOOTE, ROBERT, M.R.C.S., L.R.C.P. Lond., Assistant Resident Medical Officers.

Certifying Surgeons under the *Factory and Workshop Acts*: CABLE, J. E., M.B., Ch.B. Aberd. (Forfar); EWING, H. W., M.R.C.S., L.R.C.P. Lond. (Buntingford); WARNOCK, J. (Leeds, South).

Vacancies.

For further information refer to the advertisement columns.

Barnsley, Beckett Hospital and Dispensary.—H.P. and Jun. H.S. Each at rate of £140.
Brighton, Royal Alexandra Hospital for Sick Children.—H.S. £100.
British Hospital for Mental Disorders, &c., 72, Camden-road, N.W. Hon. P.
Chester, City and County of.—Asst. M.O.H. and Asst. Sch. M.O. £600.
Croydon County Borough.—Deputy M.O.H. and Dep. Sch. M.O. £780.
Derby County Borough Isolation Hospital and Sanatorium.—Res. M.O. £550.
Derby, County Mental Hospital, Mickleover.—Jun. Asst. M.O. £350.
Derbyshire County Sanatorium, near Chesterfield.—Res. Asst. M.O. £350.
Derbyshire Royal Infirmary.—H.S. £200.
Dewsbury County Borough.—M.O.H. £900.
Durham County and Sunderland and Eye Infirmary, Stockton-road, Sunderland.—H.S. £150.
Fulham Infirmary, St. Dunstan's-road, Hammersmith, W.—Third Asst. M.O. £250.
Hôpital and Dispensaire Français, 172, Shaftesbury-avenue, W.C.—P. to Out-patients.
Hospital for Consumption and Diseases of the Chest, Brompton, S.W.—H.P. £50.
Hospital for Diseases of the Throat, Golden-square, W.—Hon. Surg. Reg.
Huddersfield, Ministry of Pensions Mental Hospital, Kirkburton.—Sen. M.O. £600.
Lambeth Parish, Brook-street, Kennington-road, S.E.—Public Vaccinator.
Leeds Public Dispensary.—Jun. Res. M.O. £150.
Liverpool Eye and Ear Infirmary.—H.S. £100.
London Lock Hospital, 91, Dean-street, W.—H.S. at rate of £200. Also Temp. Hon. S. to Out-patients.
London Temperance Hospital, Hampstead-road, N.W.—Surg. Reg. 40 guineas.
Manchester Royal Infirmary.—Asst. Res. Surg. O. at rate of £150.
Metropolitan Hospital, Kingsland-road, E.—H.P., H.S., Jun. H.P., Jun. H.S. and two Cas. O.'s. Each at rate of £100. *Also Surg. for Dis. of Nose, Throat, and Ear.*
Middlesex Hospital Medical School.—University Chair of Biochemistry. £800.
Ministry of Health, Whitehall, S.W.—M.O.'s. £800.
Newcastle-upon-Tyne City Hospital for Infectious Diseases.—Res. Med. Asst. £350.
Newcastle-upon-Tyne, City and County of.—Tub. M.O. £750.
North Marylebone School of Mothercraft.—M.O. for Infants Clinic, 1½ guineas per session.
Oldham Union, Poor Law Institution, Rochdale-road.—Res. Asst. M.O. £300.
Prince of Wales's General Hospital, Tottenham, N.—Hon. Surg. Reg. and Hon. Med. Reg. Each £200. Also Hon. Asst. S. to *Ear, Nose, and Throat Dept.*
Putney Hospital, Lower Common, Putney, S.W.—Res. M.O. £150.
Queen Charlotte's Maternity Hospital, Marylebone-road, N.W.—Obstet. S.
Royal Chest Hospital, City-road, E.C.—Phys.
Royal Northern Hospital, Holloway, N.—H.P. and H.S. Each at rate of £75.
Salford Union Infirmary, Hope, Pendleton, near Manchester.—Radiologist. £150.
Sheffield Royal Infirmary.—H.S. £80.
Sheffield, University Royal Hospital.—Asst. Pathologist and Demonstrator of Pathology.
West End Hospital for Nervous Diseases, Welbeck-street, W.—Hon. Reg.
York City.—Asst. M.O.H., &c. £600.
York Maternity Hospital.—H.S. £250.

Births, Marriages, and Deaths.

BIRTHS.

BARCLAY.—On March 26th, 1925, at 2, Greenhead-road, Huddersfield, the wife of William Barclay, M.B., F.R.C.S. Edin. of a son.

CALWELL.—On 29th March, 1925, at 69, Holland Park-avenue, London, W. 11, to Maud, the wife of Dr. W. K. Calwell—*a son.*

ESLER.—On March 23rd, at Denholme, Datchet, Bucks, the wife of M. S. Esler, M.R.C.S., of a daughter.

GRANGE.—On March 24th, at Phœnix Lodge-mansions, Brook Green, W., the wife of F. A. Grange, M.C., M.B., B.S., of a son.

HAYMAN.—On March 26th, at Caister-road, Great Yarmouth, the wife of F. Keith Hayman, F.R.C.S., of a son.

PEAKE.—On March 18th, at Exeter, the wife of Captain H. G. Peake, Royal Army Medical Corps, of a son.

THOMPSON.—On March 25th, at The Avenue, Southampton, the wife of A. G. G. Thompson, M.D. Camb., of a daughter.

DEATHS.

MELVILLE.—On March 24th, following an operation at a London nursing home, Gordon Moncreiff Melville, M.D., of Ashley Lodge, Basingstoke, aged 42 years.

TAYLOR.—On March 22nd, at Alma-road, Clifton, Bristol, James Taylor, M.R.C.S. Eng., L.S.A.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

LEIGH INFIRMARY EXTENSION.—The governors have decided upon extensions of the infirmary which will involve a sum of about £26,000. The extensions include the erection of a new children's ward and a nurses' home.

THE Minister of Health has appointed Mr. H. W. Francis, O.B.E., Assistant Secretary, Ministry of [illegible] to the post of Receiver of the Metropolitan C[illegible] Fund with effect from April 1st, consequent on [illegible] ment of Sir Aubrey Symonds, K.C.B., as [illegible] Board of Education. Mr. E. Tudor [illegible] appointed an Assistant Secretary to the

Notes, Comments, and Abstracts.

DEAFNESS IN LITERATURE.

By Macleod Yearsley, F.R.C.S Eng.

There can be no doubt that, although it is open to debate whether blindness or deafness is the greater affliction, the former infirmity is, for purposes of charity, the more spectacular. The same holds good in literature apparently, for when, a short time ago, I made some investigation into the matter, I was surprised to find how meagre is the record. The reason is indicated in my opening sentence, and, in support of my contention that blind persons appeal far more eloquently to popular sympathy, I may quote a remark once made to me by my friend the late Mr. George R. Sims to the effect that when a dramatist wished to move his audience to tears he placed a blind character upon the stage, but when his object was to excite laughter he used one who was deaf. Yet deafness, depicted by the hand of a master, can be made as moving as blindness, as I hope to show presently.

The allusions to deafness which I have been able to find in literature are, save the occasional introduction of a deaf fool as comic relief, almost entirely confined to Boswell, Johnson, Scott, John Kerr, Dickens, and Thackeray among prose writers, to Chaucer, Shakespeare, and Hood among poets. There is also a passage on deaf-mutism of some merit, quoted as a chapter heading in "Peveril of the Peak," and ascribed by Scott to an old play, the authorship of which I have failed to discover. In reply to the question "Can she not speak?" a character answers:

> "If speech be only in accented sounds,
> Framed by the tongue and lips, the maiden's dumb;
> But if by quick and apprehensive look,
> By motion, sign, and glance, to give such meaning,
> Express as clothed in language, be termed speech,
> She hath that wondrous faculty; for her eyes,
> Like the bright stars of heaven, can hold discourse,
> Though it be mute and soundless."

Chaucer describes his Wife of Bath as deaf and states the cause:

> "But she was somewhat deaf, and that was scathe."

Her defect she owed to her fifth husband, who hit her on the head for tearing the book he was reading. The good wife began her matrimonial experiences early, since she says:

> "For, lordlings, since I twelve years was of age;
> Husbands at churché door I have had five."

Husbands had, indeed, become a habit, for she adds:

> "Welcome the sixté, when that ever he shall."

Shakespeare makes but two notable allusions to deafness, although deafness and dumbness are employed by him metaphorically no less than 39 times, while Milton uses deafness metaphorically but twice. In *Julius Cæsar*, Act i., Scene 2, the great Roman says to Antony:

> "Come on my right hand, for this ear is deaf."

In the Second Part of *King Henry IV.*, Act i., Scene 2, deafness is introduced with a more comic purpose in the meeting between the Lord Chief Justice and his Apparitors with Falstaff. The fat old reprobate tries to slink off, mindful of his last interview with the Justice, but the latter calls him back. To his page Sir John whispers aside, "Boy, tell him I am deaf," and the lad says to one of the Apparitors, "You must speak louder; my master is deaf," upon which the Justice, with reason, remarks, "I am sure he is, to anything good."

From Shakespeare to Tom Hood is a far and descending cry. The latter wrote a long poem of 811 lines, "A Tale of a Trumpet," describing the deafness of an old lady named, possibly for rhyming purposes, Dame Eleanor Spearing, who acquired a kind of demon trumpet. This poem is of peculiar interest to me as mentioning my relative, Dr. James Yearsley, who died in 1869 and was one of the first of the old London aural surgeons. The stanza runs thus:

> "In short, she was twice as deaf as Deaf Burke,
> Or all the deafness in Yearsley's work,
> Who in spite of his skill in hardness of hearing,
> Boring, blasting, and pioneering,
> To give the dummy organ a clearing,
> Could never have cured Dame Eleanor Spearing."

Boswell says little or nothing of Johnson's defective hearing, but mentions his visit to the deaf school in Edinburgh in the following words:

"Near the end of his 'Journey,' Dr. Johnson has given liberal praise to Mr. Braidwood's academy for the deaf and dumb. When he visited it, a circumstance occurred which was truly characteristical of our great lexicographer. 'Pray,' said he, 'can [illegible] pronounce any long words?' Mr. Braidwood informed him they could. Upon which Dr. Johnson wrote one of his *sesquipedalia verba*, which was pronounced by the scholars, and he was satisfied. My readers may perhaps wish to know what the word was; but I cannot gratify their curiosity. Mr. Braidwood told me it remained long in his school, but had been lost before I made my enquiry."

The actual remarks made upon this visit by Johnson are to be found in the closing chapter of his "Journey to the Western Islands of Scotland," and are no small testimony to the efficiency of the oral instruction of the deaf in the Northern Kingdom a century and a half ago. The closing paragraph is, as Boswell would say, "truly characteristical."

"It was pleasing to see one of the most desperate of human calamities capable of so much help; whatever enlarges hope will exalt courage; after having seen the deaf taught arithmetic, who would be afraid to cultivate the Hebrides?"

That Johnson was himself deaf in later life is shown by the remarks of Miss Reynolds in the Appendix of Wilson Crocker's edition of Boswell. Miss Reynolds (the great painter's deafness is well known) said that "to his defective hearing, perhaps, his unaccommodating manners may be equally ascribed." Here I may digress for a moment to note the deafness of other literary persons. It will be recalled that Harriet Martineau employed an ear-trumpet and that Herbert Spencer "tempted providence" by using ear-stoppers. Jean Jacques Rousseau was another sufferer. In his "Confessions" (Book VI.) he describes a sudden attack of vertigo, with loud head noises of four different kinds. "This internal tumult was so violent," he says, "that is has injured my auricular organs, and rendered me, from that time, not entirely deaf, but hard of hearing." When first attacked, the author of the "Social Contract" tried bed and a doctor, but not liking the treatment, which was, in accordance with the therapeutics of the time, excessively nasty, abandoned it after a short trial. "The beating of my arteries," he adds pathetically, "and the buzzing in my ears has never quitted me a moment during the 30 years which have elapsed since that time." Only those who have experienced the terrible infirmity of constant noises in the head can realise what the infliction means. Martin Luther suffered similarly, and considered them to be the voices of the Devil tempting him.

If Johnson's appreciation of Braidwood's work in 1773 be just and wise, so also is the opinion expressed by Dr. John Kerr regarding the same work a century later. The passage is in his "Memories Grave and Gay," but is too long for quotation. It speaks of his unqualified respect and admiration for the untiring patience and sympathy of teachers of the blind and deaf. Kerr also gives it as his deliberate opinion that of the two defects deafness is the more distressing.

"It may be a matter of opinion whether to be blind or to be deaf and dumb is the greater calamity, but, as a question of education, of mental health and balance, I am quite convinced that the deafmute is the greatest sufferer. He is more difficult to teach and more isolated; a wider gulf than in the case of the blind separates him from continuous, interesting intercourse with his fellows."

He gives his reasons fully in his ensuing words and with his opinion I heartily agree. It is, indeed, the most justly-reasoned summary of the comparative disadvantages of blindness and deafness that I have met with and should be read by those unthinking persons who, without adequate knowledge of the subject, assert that they would rather be deaf than blind.

Among the masters of fiction it is curious that deafness appears as a prominent incident in the works of three only—Sir Walter Scott, Thackeray, and Dickens. It is, of course, true that one may stumble across a deaf character or two, here and there, introduced for the purpose of raising a laugh, or that, in certain books (which, however, can scarcely be described as "literature") characters have pretended to be deaf and dumb in order that they might overhear certain important disclosures without exciting suspicion. Fenella in Scott's "Peveril of the Peak," is an example of these, save that she is drawn by the hand of a master. In the modern instances I gravely doubt whether such simulated deafness could be sustained with success for any length of time. I have an indistinct recollection of a detective story in which the usual astute amateur detective learned lip-reading in order to run to earth his prey. The idea is ingenious, but lip-reading is by no means easy to learn when one has one's hearing intact. But these instances are beside the point. The most important character of this kind is the Fenella to whom I have just alluded. Her real name was Zara, and she was not deaf and dumb at all, although the reader is kept in ignorance of the fact until nearly the end of the book. What is interesting to us is Scott's description of her as seen by Julian Peveril, as she stood at the head of the steps leading to the entrance of the Castle of Holm Peel in the Isle of Man.

"This little creature—for she was of the least and slightest size of womankind—was exquisitely well formed in all her limbs, which the dress she usually wore (a green silk tunic,

> of a peculiar form) set off to the best advantage. Her face was darker than the usual hue of Europeans, and the profusion of long and silken hair, which, when she undid the braids in which she commonly wore it, fell almost to her ankles, was also rather a foreign attribute. Her countenance resembled a most beautiful miniature: there was a quickness, decision, and fire, in Fenella's look, and especially in her eyes, which was probably rendered yet more alert and acute, because through the imperfections of her other organs, it was only by sight that she could obtain information of what passed around her."

The passage is so framed as deliberately to deceive the reader and throw him off the scent. Fenella does not seem to have been the type of young person one would care to invite to the proverbial tea-party, although she had many accomplishments—needlework, pencil drawing, ornamental writing. But her ready wit and acute intellect were coupled with an irascible temper, haughtiness, and vindictiveness. Her miscellaneous attainments caused her to be regarded as a fairy changeling, to which her invariable habit of wearing green helped to contribute. She was able to carry on an adequate conversation by gestures, writing, and sketching, as is vividly portrayed in the account of her first meeting with the hero. Her deceit was ultimately detected by that astute monarch Charles II., who, having directed the Countess of Derby to get into contact with her pulse, then gravely announced that her lover had been stabbed; her scream and the acceleration of her pulse gave her away. Fenella was not an original creation, for Scott confessed that he had obtained the idea from Goethe's sketch of Mignon, in Wilhelm Meister's "Lehrjahre."

Lovers of Thackeray (and I must confess myself his devoted admirer) will call to mind how, in the twenty-fifth chapter of "The Virginians" he introduces the extreme deafness of the great Lord Chesterfield, who, oblivious to the identity of Mr. Harry Esmond Warrington seated close by at the ordinary, talks scandalously both of him and his worldly old aunt, the Baroness de Bernstein, for which he makes a dignified apology upon learning his error. In a later chapter allusion is made to the deafness of Sir Joshua Reynolds.

Charles Dickens seems to have been especially fond of portraying defectives such as Smike, Barnaby Rudge, Tiny Tim, and Mr. Dick. I think Hugh, in "Barnaby Rudge," was a defective too, but, as Sir Squire Sprigge has pointed out in his delightful "Physic and Fiction," it is in descriptions of mental disease that Dickens revels, and Squeers, his daughter Fanny, and Newman Noggs were just as mad as the poor, tormented Smike. It is not to be wondered at, therefore, that he should have introduced a deaf-and-dumb child into one of his stories. We may dismiss old Mrs. Wardle in "Pickwick," "the very old lady, in a lofty cap and faded silk gown," as a very ordinary character, introduced to excite amusement. His description of her is fairly true to nature—"like most people, she never seemed to calculate the possibility of other persons hearing what she said herself," a truism pointed out also by Thackeray in the instance alluded to, but in other words. Mrs. Wardle was much less deaf on the subject of a rubber of whist than any other; my Lord Chesterfield was even more addicted to play. Possibly cards may have a special appeal to the deaf, since their use does not require much conversation.

Of a different order is Dickens's introduction of deafness in another book, for in this instance it has a touch of genius. In the penultimate chapter of "A Tale of Two Cities" (in my humble opinion the finest of his works), Miss Pross has her hearing destroyed at one fell swoop by the explosion of Madame Defarge's pistol when she is struggling with that fury of the Revolution. The truth dawns upon the courageous woman as she hurries through the streets with Mr. Jerry Cruncher. "I feel," she says, "as if there had been a flash and a crash, and that crash was the last thing I should ever hear in this life." She cannot hear the sinister rumble of the tumbrils on their way to the National Razor. . .

> "'If she don't hear the roll of those dreadful carts, now very nigh their journey's end,' said Mr. Cruncher, glancing over his shoulder, 'it's my opinion that indeed she never will hear anything else in this world.'
> And indeed she never did."

Curiously enough, Dickens's masterpiece in pathetic writing, the description of Sophy in "Dr. Marigold," seems to have been missed or forgotten by many of his readers. Yet the story sold as a Christmas number 250,000 copies in the first week and was one of its author's most successful readings. Those who know the deaf child, as I do, cannot fail to be moved by it. Dr. Marigold was a Cheap Jack, who lost his little daughter Sophy. Meeting with a giant—"He was called Rinaldo di Velasco, his name being Pickleson"—he found that Rinaldo's master had a deaf daughter whom he ill-treated. Marigold bought her for a pair of braces, and named her Sophy after his own lost little daughter. There is a delightful description of how he set out to teach her:

> "You'd have laughed—or the rewerse—it's according to your disposition if you could have seen me trying to teach Sophy. At first I was helped—you'd never guess by what—Milestones. I got some large alphabets in a box, all the letters separate on bits of bone, and saying we was going to WINDSOR, I gave her those letters in that order, and then at every milestone I showed her those same letters in that same order again and pointed towards the abode of royalty. Another time I give her CART and then chalked the same upon the cart. Another time I give her DOCTOR MARIGOLD, and hung a corresponding inscription outside my waistcoat."

Patience and trouble, as usual, triumphed, and the description of his labours is, to my mind, one of the best things Dickens ever wrote. "We had our signs, too, and they was hundreds in number," explained the Cheap Jack. Sophy was an intelligent child and responded well.

> "When I sold of a night, she would sit in the cart unseen by them outside, and would give a eager look into my eyes when I looked in, and would hand me straight the precise article or articles I wanted. And then she would clap her hands and laugh for joy."

Marigold and Sophy went happily on together until she was 16, and then her protector felt that she should have better teaching.

> "So I took her hand in mine, and went with her one day to the Deaf and Dumb establishment in London."

It is difficult to read what follows without being touched by it. One can so well realise the sacrifice which the large-hearted Cheap Jack was making. "Teach her the most that can be taught her in the shortest separation that can be named." There is a world of pathos in that. Dickens often gives one a sense of exaggerated sentiment, of striving after effect, but to those who know the deaf and their education there is nothing of that here.

> "'Well,' says he, 'can you part with her for two years?'
> 'To do her that good,—yes, sir.'
> 'There's another question,' says the gentleman, looking towards her,—'can she part with you for two years?'"

Sophy was a grown woman when her adoptive father saw her again. One gathers that her education was nor on the oral system and, seeing that she did not come under a teacher of the deaf until she was 16, this is not to be wondered at. I am at a loss to know to what institution Marigold took Sophy. Dickens must have had some particular establishment in mind when he wrote the story and probably paid it a visit in order to obtain the necessary local colour. There is, however, no allusion to any such visit in Forster's "Life," nor in any of the Dickens letters. I have, nevertheless, a suspicion that it was the school, now occupied by the London County Council as a Deaf School, in the Old Kent-road.

TWINS.

To the Editor of THE LANCET.

SIR,—Prof. G. R. Murray's remarks in THE LANCET of March 14th, on the subject of twins, recall the fact that even in Europe there was current at some very early period a belief that the bearing of more than one child at a birth was the result of the mother's adultery. That conjugal infidelity on the wife's part was at one time punishable with death is a fact well established in both Roman and Celtic tradition. Such being the case, the superstition with regard to twin births was a source of considerable danger to the mother, and the lady's attempts to evade the consequence of her rashness form the subject of a great number of mediæval romances and folk-tales. The belief occurs in various connexions in the literature and popular lore of England, France, Italy, Spain, Denmark, Holland, and Germany, being especially common in German tradition. The importance of folk-lore in the history of civilisation and in ethnology is now admitted, and the frequency with which this belief recurs can leave little doubt that at some far distant period it was widely current among the peoples of Western Europe.

A number of stories dealing with this superstition have been collected by Dr. Doris Wright Barker, and in most of them the central incident is somewhat similar. A lady of high rank accuses a beggar woman of adultery because she has borne twins. The slander is always punished by the lady herself becoming pregnant and being delivered at one birth of two or more children. The number of children is usually two, seven, or nine, but in one of the Dutch versions it is 13, and in that related in all seriousness by Korner in his "Chronik" for the year 1300 it is 364! The details vary, but in all of the tales the birth of the children is regarded as reliable evidence of their mother's guilt, and in most cases she is afraid of, or is actually threatened with, death.

The story of most interest to modern readers is a German folk-tale, the "Stamm-Sage der Welfen," or the tribal legend of the Guelphs, which professes to explain the origin of the name Guelph (Welf) which, it will be remembered, was borne before the war by our own Royal Family. In this tale it is related that the wife of Isembard von Altorf urges the death of a woman who has given birth at one time to three children, on the ground that she is an adulteress. The following year the lady is herself delivered of twelve children, and terrified of the consequences of such a feat, persuades her attendant to drown all but one. The maid places the children in a bucket, but on her way to the river is met by the father who inquires the nature of her errand. She replies that it is "but to drown a few baggage whelps in the river." Isembard, however, investigates for himself, and having finally come at the truth of the matter, sends the children to be secretly nursed. When they are grown, he presents them to his wife, who duly confesses her guilt and is forgiven. In memory of the incident, the family received the name of "Whelp" or Guelph, which is still retained by their descendants.

It has been stated that among the negroes of Guinea a woman who has borne twins is held guilty of adultery and is put to death. It would be interesting to know whether the view still to be met with that the birth of twins is something of a social blunder is a last relic of this singularly cruel and foolish superstition.

I am, Sir, yours faithfully,

Leeds, March 25th, 1925. W. Murphy.

THE LOCAL OPTION CONFERENCE.

To the Editor of The Lancet.

Sir,—It is somewhat amusing to note the references in the newspaper press to the Local Option Conference held at Hoddesdon last week, in which it is variously described as a "secret" conference or conclave. Actually, it was a private conference of temperance delegates, who, for convenience sake, met at High Leigh, which is one of the houses provided for the accommodation of summer schools and similar gatherings.

What is of importance is that before the second conference is held, the committees, which are apparently to be set up for the purpose of exploring further the questions of compensation under a local option scheme and the options which should properly find a place in such a measure, may succeed in agreeing on proposals which will be approved not only by the temperance bodies, but by the great mass of the electorate. After all, it is the latter who count, and the temperance bodies must be prepared to sacrifice their cherished ideas as to the justice of a restricted form of local option in favour of proposals which will satisfy those who are outside the official temperance movement but yet hold the key to the situation.

The weakness of the temperance party is that in its proposals it is too prone to ignore the real situation and to imagine that what it considers right is also practicable. The genuine temperance reformer who desires to make progress will acquaint himself with the position and point of view of the average elector and frame his Bill accordingly on constructive lines, relying upon the forces of education and experience to secure further progress.

I am, Sir, yours faithfully,

Surbiton, March 26th, 1925. R. Morton Stanley.

TYPHOID FEVER ON A MILK FARM.

A report from the Ministry of Health (H.M. Stationery Office, 2*d.*) deals with an outbreak of paratyphoid fever which occurred last September at Chorley. Dr. W. V. Shaw, for the Ministry, made an exhaustive inquiry into the epidemic. Sir George Newman, in a prefatory note, gives a summary of the report and adds some important comments. He states that the epidemic, comprising 52 cases, of which two ended fatally, was caused by milk infected with *Bacillus paratyphosus* B, derived from a farm in Chorley rural district. On August 7th, 1924, a case of the disease occurred in the family of the farmer and was duly notified to the public health department of the district. The acting medical officer of health visited the farm, and, it appears, consented to the patient being nursed at home. He took no steps to safeguard the milk-supply, although no less than 60 gallons per day were being sent from the farm for distribution in the borough. Further, no other visit was paid to the farm by officers of the rural district council until Oct. 1st, when the occurrence of the outbreak in the borough aroused suspicion respecting the milk from the farm in question. The prevalence of the disease in the borough of Chorley commenced on Sept. 10th, and it was found that each of the 52 patients had consumed milk from the farm at the time when members of the farmer's household were in an infective condition, as was conclusively proved, not merely on clinical grounds but as a result of bacteriological investigation. Of the eight members of the farmer's household no fewer than four had actually suffered from paratyphoid fever in addition to the original case. In the circumstances described by Dr. Shaw specific infection of the milk at the farm was almost inevitable. The patient, nevertheless, was allowed to remain at home throughout the course of her illness without any supervision on the part of officers of the local authority. No official inquiry was made to ascertain whether adequate isolation of the patient was being maintained, or whether secondary cases had occurred among other members of the household. Sir George Newman comments on the outbreak by saying that it was caused by failure on the part of the responsible officer concerned to appreciate the danger inseparable from the retention at a dairy-farm of a case of paratyphoid fever.

SUMMER-TIME.

Summer-time in France and Belgium comes into force on the night of Saturday-Sunday, April 4th–5th, and in this country on April 18th–19th. In consequence of earlier summer-time on the continent posting times in London for despatches to the continent from April 6th to 18th inclusive will be an hour earlier in the forenoon than at present.

FELLOWSHIP OF THE BRITISH EMPIRE EXHIBITION.

This Fellowship, of which the Prince of Wales is President, was founded in November, 1923, with the purpose of ensuring in the first place the full success of the British Empire Exhibition, and second, to encourage a "united family feeling" among the peoples of the Empire. The central committee hopes to extend the ranks of the Fellowship during 1925, and to maintain it as a permanent organisation to encourage trade and industry within the Empire. Membership enrolment forms may be obtained from the offices of the Central Committee, 16 Grosvenor-gardens, London, S.W.1.

AN INGENIOUS TRUSS PAD.

The T. Beasley's Surgical Appliance Company of Faraday House, 10, Charing Cross-road, London, W.C., have submitted to us a hernia appliance which should obviate a great deal of the trouble and inconvenience which may be caused by an unadaptable pad. The pad is a pear-shaped rubber bag covered with leather, and by the aid of a small detachable inflating bulb any degree of resiliency can be given to it. The air-filled pad adapts itself to the part which it is intended to support, and is kept in position by webbing or rubber bands, the latter, of course, being useful for bathing, or in the bath where the appliance is permanently worn. The whole apparatus is easily washable, and the air-valves are so simple that there is little likelihood of their getting out of order.

SIGNED BULLETINS.

We have received several communications arising out of the signing of bulletins regarding the health of distinguished patients, to which considerable point is given by the publication this week (see p. 727) of a detailed history of the last illness of President Ebert. There were reasons why no mystery should be attached to the circumstances of the death of the late German President, just as there are reasons for deploring from the historical point of view the lack of similar details concerning the death of prominent political persons. For 300 years ago the sudden or unexpected death of anyone whose activities as a statesman, or whose future opportunities as heir-apparent, might be prejudicial to a religious or political party, was attended by accusations of poisoning. Civilisation has left that sort of thing behind to-day, but it has a right to information as to the health of its leaders. Where the invalid is a member of the Royal Family the names of the medical men in attendance ought certainly to be affixed to what is a national message. Where again the patient is one who is holding or has held positions of undeniable national importance the same rule applies, and it is in accordance with this rule that the signed bulletins, with which the events of the last few weeks has familiarised us, have been in ethical order.

There can be no classification of important people in accordance with which it could be decided by any ethical committee when the health of some persons and not of other persons is a matter of such national importance that the public has a right to authoritative information guaranteed by signature. In the great majority of cases where undue publicity has appeared to be given to the names of practitioners, well known or otherwise, investigation has shown that the medical man in question had nothing to do with the unfortunate newspaper paragraph. The matter was the subject of considerable discussion by the General Medical Council during the winter session of 1922, when the difficulty of detecting what were real breaches of ethical conduct was recognised, though the existence of abuses was acknowledged and regretted.

Lettsomian Lectures

ON

WOUNDS AND OTHER INJURIES IN THEIR MEDICO-LEGAL ASPECT.

Delivered before the Medical Society of London

By Sir BERNARD SPILSBURY, M.B., B.Ch. Oxf.,
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LECTURE III.*

In the second lecture I described the characters of incised wounds and stabs, and indicated the means by which they are produced; examples were given of methods of distinguishing suicidal from homicidal wounding, and of different ways in which death followed in these classes of injury.

Architecture of the Skull.

Fractures of the cranial bones, when they are examined in their medico-legal bearings, are distinguished from other fractures by the difficulty in many cases of estimating the degree of force that caused them, and of determining its point of application and direction. This difficulty is the result of the complex physical problem presented by the skull with its contents, and by the inadequate information, in many cases, as to the circumstances in which the injury was inflicted. If, for example, the victim was knocked down by a moving vehicle there may be no information as to where the vehicle hit him, as to what part of his body struck the ground, and as to whether he was dragged or crushed by the vehicle as he lay upon the ground.

Scalp injuries often give valuable information as to the point of application of the force, the nature and shape of the striking surface, and sometimes of the direction in which a blow was delivered. Bruises and wounds in the scalp should be studied as to their size, distribution, and relation to fractures, and a wound, if it is undermined along one margin, will give information of the direction in which the force was applied. Thus, a man who receives a blow on the forehead and falls, striking the back of his head on the ground, producing a lacerated wound on the left side of the occipital protuberance, may be found to have a fissured fracture running forwards for some distance in the base of the skull from the wound in the back of the head. In such a case the fracture has clearly originated at the point of application of the force, and is due to the fall, and not to the blow.

Drunkenness predisposes to head injury on account of the general muscular relaxation, so that in falling, the head strikes the ground with greater violence. The skull is generally regarded as a fairly rigid bony case, containing a semi-fluid incompressible mass, and possessing a certain degree of elasticity. The case is of irregular form and of complicated architecture, and is a good example of the adaptation of structure to function. The vertex, which is exposed to direct violence, has a regular curved form and a stout structure, a buffer of cancellous tissue, the diploë, separating two tables of compact bone; the base, which is protected in great part from direct violence by muscles, and by the attachment to it of the structures of the face and neck, is much more lightly built, consisting either of cancellous tissue, with a very thin compact shell, the bone being hollowed out in places by air spaces, or of thin plates of compact bony tissue, and it owes its strength and rigidity to a very irregular form, being subdivided into three pairs of fossæ, each pair lying in a different plane, and separated from one another by buttresses of stouter bone, which extend down from the vertex. The anterior fossæ are fairly horizontal and slope upwards slightly at the sides, but the middle fossæ slope abruptly downwards to the foramen magnum, curving upwards again from its posterior margin; these fossæ are hollowed out on each side of the middle line. The base of the skull is weakened in places by large foramina.

The contents of the skull consist of a more solid tissue, the brain, and a fluid portion, comprising the cerebro-spinal fluid and blood. It is only by the sudden escape of some of its fluid content that the cavity of the skull can be actually reduced in size by forces acting on it from outside, and this is brought about by the escape of blood from the venous sinuses. The fibrous septa of the dura mater, partly dividing the cavity into three compartments, renders still more difficult the calculation of the physical factors concerned in the production of fractures.

The structure of the skull changes at different periods of life; in infancy, and again in old age, when the bones may become more brittle, the physical properties of the skull differ markedly from those of the adult. There are also modifications of structure which are peculiar to the individual, and in every case of fracture the texture of different parts of the skull should be observed. A fracture is easily produced by violence applied directly to the base of the skull; the relative weakness of the base explains the ease with which it is fractured by direct violence, and the frequency with which fractures starting near the junction of vertex and base pass downwards rather than upwards.

Pathological Conditions in the Skull in Relation to Fractures.

Pathological changes in the skull may greatly affect the formation and extension of fractures. Extreme thinness of the whole of the vertex of the skull is occasionally found at any age; the condition may be due to slight internal hydrocephalus or other pathological condition, producing increased intracranial pressure of long duration; no cause for the condition may be found. The following are examples of fracture produced in very thin skulls by slight causes.

An Australian soldier of uncertain age was walking on the slippery surface of a frozen road when he fell forwards on his hands and knees, and struck his head slightly on the ground, producing an abrasion on one eyebrow. He got up at once, apparently none the worse for the fall, and went to bed as usual. Some hours later he was found unconscious, breathing stertorously, and he died less than three hours afterwards. On post-mortem examination of the body there was no injury of the bone beneath the abrasion, although the skull was little thicker than paper, but three fissured fractures were found in the left middle fossa, radiating from a point slightly external to the foramen spinosum; the fractures did not extend beyond the limits of the fossa. The middle meningeal artery was injured at the central point of the fractures, and death was due to compression of the brain by a large extradural hæmorrhage.

In another case a girl, aged 6, was running in the street when her shoe twisted under her, and she fell on the edge of the pavement. She got up with help and seemed to be shaken. On reaching home she complained of pain at the side of the head. Two hours later she lost consciousness, her breathing became stertorous, her pulse-rate was reduced, and her right pupil became dilated; she died about eight hours after the accident. Upon examination a small bruise was found in the scalp a short distance behind the right ear; there was hæmorrhage into the temporal muscle beneath the bruise, and a fissured fracture was found in the skull; this started beneath the bruise and ran downwards and forwards for 2½ inches, terminating in the right middle fossa. The fracture gaped slightly, the middle meningeal artery was torn, and there was a fairly large extradural hæmorrhage. There was no intradural hæmorrhage, excepting a tiny bruise in the contre-coup position on the surface of the left cerebral hemisphere. The skull at the front and sides of the head was no thicker than paper.

Obscure conditions of local or general thickening of the skull will have the opposite effect. There is no doubt also that the structure of the skull may be modified by occupation, and the bones proportionately strengthened when continually exposed to such strain as that imposed by the carrying of heavy weights on the head; whilst racial differences, as in the negro, have also to be taken into account.

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* Lectures I. and II. appeared in The Lancet of Feb. 28th (p. 421) and March 7th (p. 480) respectively.

Sutures in Relation to Fracture.

A suture may divert a fracture; thus a fracture passing at an acute angle into a suture may run for some distance along it, opening the suture, then leaving it to continue in the adjacent bone in a direction parallel to its original course, or in an entirely different direction; when sutures are completely obliterated, as in old age, this modification will not be found.

An unusual example of a fissured fracture traversing sutures was found in a young man aged 23 who was struck a severe blow on the head and died from its effects in a few hours. He had a lacerated scalp wound on the right side of the back of the head; it was more than an inch long, ran transversely, and extended to the middle line 1½ inches above the occipital protuberance. The upper margin of the wound was slightly undercut in the middle line, and there was considerable bruising around it. The skull was thin and brittle, especially at the sides. The right parieto-occipital suture was beneath the wound and was sprung from the middle line to its right extremity; from that point a fracture ran horizontally forwards through the squamous bone immediately above the ear, then turned upwards to the squamo-parietal suture, in which it ran forwards and then downwards to the base of the skull in the right middle fossa, where it entered the groove for the middle meningeal artery, along which it extended to the foramen spinosum. The middle meningeal artery was torn about ¾ inch from the foramen; the man died from an extradural hæmorrhage.

Fractures of the Skull.

Fractures of the skull are produced by the application of force directly to the vertex or base, but the base suffers far less frequently from direct violence. The anterior fossæ are occasionally fractured by blows reaching the roof of the orbit, or nose, the middle fossa through force acting through the mouth or pharynx, and the posterior fossa may be injured by force transmitted upwards by the spine, or through the upper part of the back of the neck.

An unusual example of fracture of the base of the skull by direct violence was that of a young man, who, when riding a bicycle, collided with a motor-car. He was profoundly unconscious on admission into hospital; he became delirious and died from respiratory failure 12 hours later. Shortly before death the right eye was protruded. At the autopsy there was a superficial lacerated wound along the right supra-orbital ridge, the eyelids were bruised on both sides, and there were slight abrasions on the left side of the face. The right eyeball was unruptured, but there was hæmorrhage in the posterior chamber. The orbital plate of the right frontal bone was fractured, a triangular piece about the size of a threepenny-piece being completely detached. The dura mater was torn over the fracture, and the fragment of bone was found in a mass of blood-clot immediately above its original position. Above the fracture the brain was lacerated, and a broad track, filled with blood-clot, extended from the laceration completely through the right cerebral hemisphere in an upward, inward, and backward direction: the corpus striatum was injured near its front end; the lower edge of the falx cerebri and the inferior longitudinal sinus were torn. There was superficial laceration of the left cerebral hemisphere on its inner surface in the same line. There was a collection of blood-clot, which had escaped from the sinus in the longitudinal fissure.

At the moment of collision the young man must have received a severe blow directly in front of the right eye, bruising the eyeball without rupturing it, and driving the eyeball with such violence against the roof of the orbit as to fracture the bone, and force the fragment through the right cerebral hemisphere as far as the middle line. The escape of blood from the tear in the longitudinal sinus pushed back the piece of bone, which was a very thin flake, along the track to the point where it was found.

Far more frequently fractures in the base are the result of the extension of fractures produced by violence applied to the vertex, the fracture starting at the point of impact on the skull, and running downwards in a line which is fairly straight, when allowance is made for difference of strength and irregularity of shape of the base; this line corresponds with, or is parallel to, the direction of the force. The following is a typical example of a simple fissured fracture of the skull caused by a fall:—

An elderly woman going downstairs was heard to fall; she was found unconscious at the foot of the stairs, and was bleeding from the mouth, nose, and ears; unconsciousness deepened, and she died a few hours after the accident. She had a lacerated scalp wound 2½ inches long, and transverse in direction, in the left occipital region. Beneath the wound was a fissured fracture which extended downwards, forwards, and slightly inwards, in a straight line across the left posterior fossa and the pituitary fossa. There was superficial laceration of the left lobe of the cerebellum beneath the fracture, and contre-coup injury of the right frontal lobe and of the right temporal pole.

In another case a young woman was admitted into hospital for the treatment of a badly lacerated vagina produced during labour. She became strange in her manner, and a few days later, eluding the nurses, she escaped from the ward to the roof of the hospital, from which she fell a considerable distance, being picked up unconscious, and dying shortly afterwards. She had a contused lacerated wound 1½ inches long immediately above and behind the right ear. Beneath the wound was a fissured fracture which extended across the base of the skull, the fracture bifurcating to enclose the right petrous bone, which was also traversed by a fracture through the tegmen tympani. The fracture then crossed the sphenoid behind the pituitary fossa, and passed in front of the left petrous bone to the junction of the base and vault; the skull was dense.

This fracture resembled the one most frequently produced by bilateral compression of the skull.

Fissured fractures often cross foramina; in one case a fracture which started at the occipital protuberance, as the result of a fall on the back of the head, ran downwards and forwards in the middle line to the foramen magnum; it continued its course in the middle line for another inch from the anterior margin of the foramen. Occasionally a fissured fracture starting near the junction of vertex and base will run through the vertex rather than downwards.

An instance of this was found in a man, aged 50, who was admitted into hospital in a comatose condition, with a head injury, the result of a fight; he died three hours later. He had a lacerated wound in the mid-occipital region, and on internal examination a fissured fracture extended from the wound forwards in the middle line, over the vertex to the root of the nose. The interparietal suture was opened up at the back; the superior longitudinal sinus was torn, and there was hæmorrhage around it.

A fracture may be found extending across the base of the skull between two points on opposite sides of the vault, which have been simultaneously compressed. The explanation of these double compression fractures is that severe pressure at two points reduces the distance between them, the incompressible contents distending the skull in other directions, especially at the equator, where the skull may burst open in the weakest part of its circumference—namely, the base, near the middle-line—the fracture extending towards the two points of compression.

A typical bilateral compression fracture was found in a young man who was knocked down and run over by a van, a wheel passing over his head. He was admitted into hospital deeply unconscious; there was much hæmorrhage from the right ear and weakness of the right side of the body. He died less than three days later without regaining consciousness. On examination abrasions were found on the right ear and behind it, and on the left side of the head and left cheek, the left eye being bruised. A fissured fracture extended transversely across the base of the skull through the middle fossæ and the pituitary fossa, running immediately in front of the petrous bones. On the right side the fracture also extended to the posterior fossa along the line of the inferior petrosal sinus. Death was caused by septic meningitis of the base of the brain, consequent upon injury to the wall of the sphenoidal sinus.

When very considerable force is applied over a small area of the vertex, a local fracture may be produced, which corresponds in form with the striking surface. Thus, the fracture produced by a penetrating stab with a sharp knife, or by the edge of a heavy sword, may exactly fit the part of the weapon which penetrated the bone. If the weapon has a thick blade and a wedge-shaped edge, as for example, a hatchet, a fissured fracture may extend for some distance from each end of the cut produced by the blade.

A very severe blow with a blunt weapon, such as the head of a hammer, may produce a local depressed fracture corresponding accurately, on the outer surface of the skull, with the striking surface of the weapon. But, as in the case of bullet injuries in the skull described in the first lecture, the extent of the fracturing of the inner table is always greater, and generally of more irregular shape. Occasionally the outer table will scarcely be indented whilst the inner table is markedly depressed. Very rarely the outer table is driven inwards, and the diploë crushed, without apparent damage to the inner table.

It may happen that a depressed fracture of unusual shape will enable the weapon to be identified.

A woman, aged 70, was found dead in her apartment, with serious injuries produced by a murderous assault; a young man was charged with causing her death, and was convicted of murder. There were 17 lacerated wounds on the left side of the head, and two similar wounds near the right ear. There were three incised wounds on the front and right side of the neck. There were also bruises and lacerated wounds, and a number of cuts on the hands and fingers. Six depressed fractures were found beneath the lacerated wounds on the left side of the head; three of the depressions were of the same size and shape on the outer surface, well defined and rectangular; the other three were of about the same size, but were less regular in form. There was only slight extradural hæmorrhage beneath the fractures; there was no intradural hæmorrhage and no injury to the brain.

In the murdered woman's room was a poker, the head of which was faceted at the sides, the facets being rectangular and corresponding exactly in shape and size with three of the depressed fractures. There was no doubt that this was the weapon with which the injuries on the head were inflicted.

The fracture produced by a stick, or a poker, when great violence has been employed is an elongated, gutter-shaped fracture. If the object producing the fracture is of small size, such as a pebble, it may be found embedded in the fracture. With rather less violence the same type of weapon will produce a less severe depressed fracture, from which one or more short fissured fractures extend. With still less violence a single fissured fracture of considerable extent may be found. The depressed fractures produced by weapons having a limited striking area, and many of the fissured fractures produced by these weapons, are compound, the soft tissues covering the bone being split open in the area of greatest compression. Fissured fractures of the base, laying open the sphenoidal or other sinuses, are also compound, and death may follow from meningitis, as in the case of double compression fracture already described.

When a large area of the head is subjected to considerable violence, as in falls on a level surface from a height, fractures of the skull may be local, but involve a larger area than those produced by small striking surfaces; these are generally comminuted, and similar, but more extensive, fractures are produced by severe crushing injuries of the head. There may be little depression of the broken fragments, but fissured fractures generally radiate from the margin of the comminuted area; these are also less frequently compound than depressed fractures.

In the following case a man, aged 42, was admitted into hospital in an unconscious condition, having fallen a distance of 60 feet; he died an hour after admission. At the post-mortem examination there were two irregular lacerated wounds of the scalp, one over each parietal bone. The top of the skull was smashed into about a dozen pieces, the fractures appearing to radiate from the right parietal eminence. There was also a transverse fracture of the base, through the pituitary fossa and the petrous bones. The cribriform plate and the orbital plates of the frontal bones were also fractured, the right orbital plate being comminuted. There was meningeal hæmorrhage over the whole surface of the brain, but there was only slight contre-coup injury of the right frontal and temporal poles and of the lower surface of the right lobe of the cerebellum.

The squamous portions of the temporal bones are generally thinner than the rest of the vertex; the diploë may be absent, and the two tables united to form a thin plate of compact bone; a similar structure is sometimes present in the posterior fossæ below the level of the lateral sinuses. Less violence is necessary to produce fractures in these areas.

When the effects of the passage of bullets through the head were described, I pointed out that amongst the bursting effects it was not infrequent to meet with isolated fractures in the orbital plate of the frontal bone, the cribriform plate, and in the tegmen tympani, when these areas were unusually thin. The bone then consists of a delicate plate of compact tissue, and the fractures are often comminuted. Fissured fractures which extend to the base are likely to be comminuted, as they cross such areas as these. But contre-coup fractures are occasionally seen in these areas, a violent blow, for example on the occiput, driving the brain against the inner surface of the skull with such force as not only to bruise or lacerate the frontal and temporal poles, but to produce fractures of thin orbital plates, the injury being followed by hæmorrhage into the eyelids if the patient survives for a sufficient length of time.

Contre-coup fractures were found in a man, aged 71, who was crossing the street when he was knocked down by a cyclist. He managed to walk home with assistance, but he gradually lost consciousness later, and died about 20 hours after the accident. He had two superficial lacerated wounds on the left side of the back of the head, neither passing completely through the scalp. There was extensive bruising round these areas and around the left eye, where the bruise showed some colour changes. There was slight bruising of the right upper eyelid. The base of the skull was unusually thin, especially the orbital plates. A fissured fracture was found beneath one of the scalp wounds, at a point 1¼ inches to the left of the middle line and ¾ inch above the level of the occipital protuberance; the fracture extended downwards, forwards, and slightly inwards, crossing the left posterior fossa, and ending at the petrous bone. There was another fracture an inch long in the right orbital plate, running forwards and outwards, and a third fracture in the left orbital plate.

The last of these, and probably the one in the right orbital plate, are examples of contre-coup fracture of the skull produced by violent impact between the brain and the skull at the moment when the back of his head struck the ground, the very thin bone giving way without causing injury to the brain. When the skull is extremely thin all over, the jarring due to a slight blow or fall may produce a fracture in an area at a distance from the point of application of the force, which does not coincide in direction with the force, and which is not in the contre-coup position. The groove for the middle meningeal artery and its branches may be unusually deep and its floor may consist of very thin bone; a fracture may arise in one of these grooves and may extend along it and its branches without involving any other part of the skull. The middle meningeal artery is likely to be torn, and an extradural hæmorrhage produced as a result of such an injury. The following case illustrates this type of injury:—

A man, aged 40, fell in the street, striking his head on the pavement; shortly afterwards he complained of pain in the head, rapidly lost consciousness, and died about five hours after the accident. On examination of the body a small bruise was found in the scalp 2 inches above the left ear, where his head had struck the ground. The skull was thin, especially at the sides, and was deeply grooved for the middle meningeal arteries. There was a V-shaped fissured fracture in the left middle fossa, the apex of the V being in the groove for the middle meningeal artery, and the two limbs of the fracture extended along the grooves for the main branches of the artery. The artery was torn at the apex of the fracture, and there was a large extradural hæmorrhage spreading from the injured vessel upwards to the vertex. There was no intradural hæmorrhage and no injury to the brain, and the fracture of the skull was confined to the grooves for the artery.

Contre-coup Injury to the Brain.

When we consider how contre-coup injury of the brain is produced it is perhaps incorrect to regard the contents of the cranium merely as a semi-fluid mass, for the brain has a defined form, and tends to move as a whole in response to a force applied at one point. If, for example, a heavy fall on the back of the head produces a lacerated wound on the right side of the occiput, and a fissured fracture extending across the pituitary fossa, it will frequently be found that whilst the opposite point in the brain, in this case the left frontal pole, shows contre-coup injury, less marked injury is frequently seen at the right frontal pole and frequently at both temporal poles.

Contre-coup injury to the brain varies in degree. Sometimes the damage is confined to a few small vessels in the pia mater; in other cases there is superficial bruising of the brain, and in more severe injuries the bruising extends deeply, and may be followed by considerable hæmorrhage into the substance of the brain. Occasionally contre-coup injury to the brain is produced by its projection against one of the fibrous septa of the dura mater, especially the falx cerebri, the injury being found on the mesial aspect of the cerebral hemisphere on the side on which the blow has been delivered.

When there are unusually marked variations in the thickness of the different parts of the skull, a fissured fracture, starting at the point of application of the force, and extending for a certain distance, may end in fairly thick bone, and a separate fracture may be found in very thin bone in the same line, the two being separated by an area of intact bone. Of this the following is an example:—

A young man fell down 17 stone steps; he was found unconscious and was admitted into hospital in a comatose condition, remaining so until death 13 hours later. He had a small superficial abrasion on the back of the head, midway between the left ear and the occipital protuberance, with a large bruise around the wound. A fissured fracture started beneath the abrasion and ran forwards through the left posterior fossa, to end close to the margin of the foramen magnum. A separate fracture in line with this one traversed the orbital plate of the right frontal bone, which was very thin, from behind forwards and slightly outwards. There was hæmorrhage into the orbital tissues, and deep laceration and bruising of the lower surface of the right frontal lobe, extending into the lateral ventricle, and extensive superficial bruising of the right temporo-sphenoidal lobe.

Intracranial Hæmorrhage without Fracture.

It occasionally happens that a person receiving a blow upon the head dies from extradural hæmorrhage due to rupture of the middle meningeal artery, without fracture of the skull, which in these cases is generally abnormally thin; the hæmorrhage is probably due to laceration of a branch of the artery, produced by sudden deformation of the skull. The following case illustrates this condition:—

A youth of 16 was admitted into hospital as the result of an accident, the nature of which is not recorded. He was deeply unconscious, and died on the following day. On examination of the body there were superficial abrasions on the left forehead and cheek, and on the left side of the chin. The skull was very thin, and was excavated on the inner surface by the cerebral convolutions. The grooves for the middle meningeal arteries were also deep. There was a large extradural hæmorrhage on the left side over the middle meningeal artery; the injury of the vessel could not be located, and a careful search failed to reveal a fracture of the skull. There was no injury to the brain and no intradural hæmorrhage.

Occasionally, also, a fall produces injury of the brain, sometimes in the contre-coup position, terminating fatally, without producing a fracture of the skull.

Thus, a man, aged 30, fell on the back of his head from a ladder; he was comatose on admission, but there was no bleeding or vomiting; coma gradually deepened and he died six days after the accident. On examination of the body a lacerated wound 1¼ inches long was found in the right occipital region, and there was extensive bruising around the wound. There was no fracture of the skull, but there was extensive superficial laceration of the brain at both frontal poles, and much subdural hæmorrhage over the greater part of the surface of the brain.

In another case a man, 13 years of age, fell 20 feet, his face striking the ground. The injury to the brain was at the occipital poles and along the posterior borders of the cerebellar hemispheres; the skull in this case was thick and dense, and was unfractured.

INJURIES TO THE HEAD IN INFANTS.

In infancy the skull differs markedly in structure from the adult form, to which it approximates only after the second year. Instead of having a complete and rigid bony wall, the cranial cavity is bounded by bones which in the base are joined to one another by cartilage, but in the vertex are separated by fibrous septa, which in places are fairly broad. The bones of the vertex are pliable, and can be bent to a considerable extent without fracturing. The skull can therefore undergo considerable alteration in shape, under the influence of pressure, without being fractured, or the brain injured.

This is seen in the moulding of the head which occurs during labour. If considerable force is applied to the vertex of the skull over a limited area it produces a local indentation which, if very marked or sudden, may fracture the skull and may even tear the dura mater beneath the fracture. The parietal bone is the one most frequently injured, the fractures generally crossing or radiating from its eminence. The presence of fibrous septa tends to limit a fracture to the bone in which it arises, but if pressure or force is applied near the junction of two or more bones, indentation of the head may lead to the fracturing of adjacent bones, the fractures not infrequently running in different directions in contiguous bones.

This condition was found in a new-born child, whose dead body, wrapped in paper, was found under the seat of a railway carriage; the mother was charged with causing its death. There was a slight abrasion on the right temple, bruising of the right conjunctiva, and much bruising in the scalp over the whole of the right side of the head. In the right parietal bone two fissured fractures radiated from the eminence, in the form of a V, to the posterior and inner margins of the bone, and two other fractures extended from the inner margin towards the eminence; a fracture 1 inch long ran horizontally across the middle of the front of the head, involving both frontal bones. There was slight extradural hæmorrhage beneath the fractures in the parietal bone, and a little free blood over the whole surface of the brain, but no injury of the brain.

The following case is an example of a very severe injury of the skull:—

An infant, 4 months old, was brought to the hospital deeply unconscious, with dilated pupils; a depressed fracture was felt on the right side of the head; death occurred the following day. The child was stated to have been found unconscious, having apparently fallen from a chair. On examination of the body there was severe hæmorrhage in the scalp over the whole of the right side and back of the head. A fissured fracture traversed the right parietal bone parallel to and 1½ inches from the middle line; the fractured edges were separated by half an inch in the centre, the dura mater was torn, and brain matter protruded. The fracture also extended in the same line through the right frontal bone, almost to the margin of the orbit, and at the back it extended into the occipital bone, curving round and crossing the middle line half an inch above the occipital protuberance and terminating one inch to the left of the middle line. The brain was lacerated along the whole area of the fracture, the injury being most severe beneath the fracture in the parietal bone. There was *no contre-coup injury* of the brain. Such a severe injury could not have been produced by a fall from a chair, and was probably the result of a very severe blow with a stick or similar object.

In infants fractures of the vault do not often extend to the base on account of the absence of rigidity, and for the same reason double compression fractures of the base are not seen. By the age of 2 years, however, the skull has developed a fairly rigid structure and the types of fracture seen in the adult may then be found. The following case is an example:—

A child of 2 years was admitted into hospital deeply unconscious, having fallen upon its head. It remained in this condition until death 18 hours later, having developed no nerve palsies or other localising signs. The only injuries were in the head; there was hæmorrhage into the eyelids on both sides, and blood in the right ear. There was a fracture completely across the base of the skull, at the junction of the anterior and middle fossæ, the fracture also extending upwards into the vault on the right side; the cribriform plate was disorganised. Another fissure extended backwards through the right middle fossa to the petrous bone. There was no hæmorrhage within the skull, and no apparent injury to the brain.

In infants injury to the brain is found only in the more severe cases, and then usually along the line of the fracture; contre-coup injuries are not found, the earliest age at which I have seen them being at 2 years and 8 months, in a boy who was being carried across the road by a brother, when they were knocked down, but not run over, by a motor-car. The boy was conscious when he was picked up, but became restless during the night, had screaming attacks and fits, passing into a condition of coma, and died 24 hours after the accident. There were abrasions and bruises on his forehead in the middle line, and a fissured fracture, which started in the middle line of the forehead and ran backwards through the base, traversing the cribriform plate and terminating in the pituitary fossa. In addition to slight bruising of the frontal poles there was slight contre-coup bruising along the posterior borders of the lateral lobes of the cerebellum. There was only slight meningeal hæmorrhage.

Another striking feature of head injuries in infants is the very slight amount or even absence of meningeal hæmorrhage, except in those cases in which the brain is severely injured; death from concussion of the brain is relatively more frequent in children than in adults. Owing to the yielding character of the skull, the lacerated scalp wounds, so common in the more severe injuries of the head in adults are not found, excepting in cases in which the head is severely crushed or the scalp torn against a projection.

COMPLICATIONS OF FRACTURES.

The intracranial effects and complications of fractures may appear either immediately or after a variable interval of time; occasionally they only become manifest a long time after the injury has been inflicted.

Of the immediate effects concussion is the principal, and is responsible for the unconsciousness which supervenes instantly in many cases of fracture of the skull. Death may be due to concussion, no gross change being found in the brain, except a little blood in the cerebro-spinal fluid of the lateral ventricles. Occasionally death occurs rapidly from hæmorrhage into the substance of the brain as an immediate effect of the injury; this is generally the result of damage to a vital part of the brain, such as the basal nuclei, the pons, or the medulla.

More frequently death is due to intradural hæmorrhage resulting from injury to the surface of the brain, the injury being immediately beneath the area of application of the force, or in the contre-coup position. The degree of laceration of the brain determines whether the hæmorrhage is limited to the subarachnoid tissue, or escapes into the subdural space, where it accumulates in dependent areas. When the brain is badly injured massive hæmorrhage may develop in the substance of the brain, extending even into the lateral ventricles.

Extradural hæmorrhage is responsible for death in a certain proportion of cases of head injury; it is generally the result of a fracture crossing the middle meningeal artery, but it may be produced by laceration of the lateral or other venous sinuses, the time between the infliction of the injury and the onset of symptoms being longer when the hæmorrhage is from the vein. Septic infection of the meninges develops in a certain proportion of cases of compound fracture of the skull, principally in those which cross the base and open one of the accessory air-sinuses, but septic infection of the scalp at the site of injury may extend through a fissured fracture to the meninges. Brain abscess is an occasional complication of fracture of the skull.

Of the remote effects of fracture of the skull it is more difficult to speak with certainty. We occasionally meet with undoubted examples of localised tuberculous infection of the brain, following upon injury to the head, in those who have an active focus of the disease in the body. The tumour-like masses are found in the superficial part of the brain beneath the injured area, or in the contre-coup position. Brain injury may determine the settlement of syphilitic lesions, though the evidence for this is less conclusive. In the case of true neoplasms we undoubtedly meet with examples of glioma, and endothelioma, developing in the subjects of previous severe injury of the head, and in some cases showing a similar relationship to the site of the injury, developing, that is to say, either immediately beneath the injured area or in the contre-coup position.

INJURY TO INTRACRANIAL ARTERIES.

Lastly, injury to the arteries within the skull may give rise to remote effects. An artery may be crushed and injured by sudden pressure of the brain against the skull, or may be stretched and torn by a violent blow upon the head. The injury, if it does not result in immediate rupture of the artery, may be followed by the development of an aneurysm. A history of previous severe head injury is found in some cases of cerebral aneurysm, rupture occurring either a few weeks, or some years, after the injury, or the aneurysm is found in a person dying from another cause. The anterior cerebral arteries at their commencement appear especially liable to develop aneurysm from trauma, death resulting from rupture into the frontal lobe. The injury in these cases is frequently a severe blow upon the top of the head producing unconsciousness at the time. The following cases illustrate the association of cerebral aneurysm with previous injury:—

A man, aged 61, died from acute intestinal obstruction, produced by the passage of a coil of small intestine through an opening in the omentum. At the post-mortem examination an aneurysm about the size of a pea was found in one of the anterior cerebral arteries, close to its origin; the aneurysm was unruptured, and had a fairly thick wall. There was an indurated yellow area in the brain immediately above the aneurysm, the result of previous injury and hæmorrhage. There was some senile atrophy of the brain, with dilatation of the ventricles, and slight atheroma of the cerebral arteries, but there was no indication of a previous fracture of the skull and no evidence of syphilis in any part of the body. On inquiring into the man's history it was found that 20 years previously he had received a severe blow on the top of the head when he was at work. He was rendered unconscious, and was incapacitated for some time. He then became insane, was in an asylum for three months, but made a complete recovery, and had no mental abnormality afterwards, nor had he complained of his head since that time.

It is evident from the after-effects that this man had received a very severe injury to his head. The close relationship anatomically of the aneurysm and the injured area in the brain is suggestive of their both having been produced by the blow.

The next case shows a much closer relationship in time between the injury to the head and death from a ruptured cerebral aneurysm.

An apparently healthy man, aged 38, was a caretaker in a factory; in the course of his night round he was passing through a doorway when several heavy boxes, each weighing 13 lb., fell from a shelf upon his head. He was found in a dazed condition, and had a slight abrasion on the right side of the top of the head and a lacerated wound on the right ear; he complained of a strange feeling in the head. Shortly after he had pains in the head and attacks of vomiting, for which he was treated medically and was later sent to hospital, where the Wassermann reaction was found to be strongly positive. His eyesight became bad, but improved for a time under treatment, and no optic neuritis was found. The pains in the head becoming much worse, he was sent to an infirmary, where he suddenly lost consciousness, and died in a few hours. Death occurred rather more than five months after the accident. On post-mortem examination a large recent hæmorrhage was found in the substance of the right frontal lobe of the brain; there was no appreciable meningeal hæmorrhage. On the right anterior cerebral artery, close to its origin, was an aneurysm about the size of a small pea, which had ruptured into the cerebral hemisphere. The arteries of the brain were otherwise healthy, and there was no indication of syphilitic disease in any part of the body. On microscopic examination the wall of the aneurysm consisted of fibrous tissue infiltrated with blood, but a small artery close to the aneurysm showed some endarteritis. Although syphilis cannot be excluded as a factor in the production of the aneurysm, the development of head symptoms immediately after the accident in a man who was apparently perfectly healthy, and their continuance until the time when he died of a ruptured aneurysm clearly indicate, in my view, a relationship between the formation of the aneurysm and the blow upon the head.

An even closer association with injury is seen in the following case:—

A young man, aged 22, who was said to be perfectly healthy, slipped and fell in the street, and lost consciousness for about five minutes. He recovered and went home, where he said he had ricked his head. He was never well after the accident, complaining of pain in the head; he had frequent vomiting attacks and suffered from sleeplessness; his vision also became impaired. Fourteen days after the accident he had what appeared to be a fainting attack; four days later he became unconscious immediately after he went to bed, and died three hours afterwards, having had attacks of vomiting and frequent fits during that time. On post-mortem examination he was a well-nourished, muscular man. There were no external injuries. On opening the head a saccular aneurysm was found on the left anterior cerebral artery, close to its origin; the aneurysm had ruptured into the left frontal lobe and had burst into the lateral ventricle, all the ventricles of the brain being filled with blood. There was a little meningeal hæmorrhage between the frontal lobes, and more around the pons and cerebellum. There was no brain disease; the cerebral arteries were otherwise healthy, and no disease was found in the body. There were no indications of syphilitic or tuberculous disease on microscopic examination of the wall of the aneurysm.

In this case there can be no reasonable doubt that the formation of the aneurysm and its rupture were due to the fall.

Summary.

For this lecture I have analysed 216 fatal cases of fracture of the skull, and I have endeavoured to obtain from them any information bearing upon the conditions which contributed to their production.

The dominating feature which emerges from such an analysis is the profound influence exercised by the structure of the cranial wall upon the effects of all but the most severe forms of violence applied to any part of the skull. The most marked contrast is between the fractures of infancy and those found in the adult form, but even in the adult striking individual discrepancies occur; some of these, as I have attempted to show, are explained by anatomical peculiarities, but many fractures will remain unexplained until we are able to assess with greater accuracy the complex physics of the skull.

Conclusion.

At the beginning of the first lecture I stated that it was impossible, in the time at my disposal, to give a complete account of the subject which I had selected —"Wounds and Other Injuries in their Medico-legal Aspect"—and I undertook to give you instead the results of my experience. Many gaps must be bridged in this method of treatment, whilst certain features are strongly, even perhaps over, emphasised in an attempt to extract from a multitude of facts the governing principles. The cases quoted in the lectures are intended to illustrate the text, and to bring into relief, in each example, some one point which I regard as of importance. The interpretation placed upon the facts is generally an amplification, rather than a contradiction, of accepted doctrine.

Aberdeen Hospital for Sick Children.—For more than a generation the buildings of this hospital have been unsuitable and the accommodation inadequate. It has now been decided to erect a new hospital upon a site paid for by Mr. and Mrs. Herbert Taylor, of Aboyne, at a cost of £110,000, of which £50,000 is already available.

Goulstonian Lectures

ON THE STUDY OF

GASTRIC FUNCTION IN HEALTH AND DISEASE.

By JOHN A. RYLE, M.D., F.R.C.P. Lond.,
ASSISTANT PHYSICIAN AND LECTURER ON MEDICAL PATHOLOGY, GUY'S HOSPITAL.

(Concluded from p. 705.)

LECTURE III.

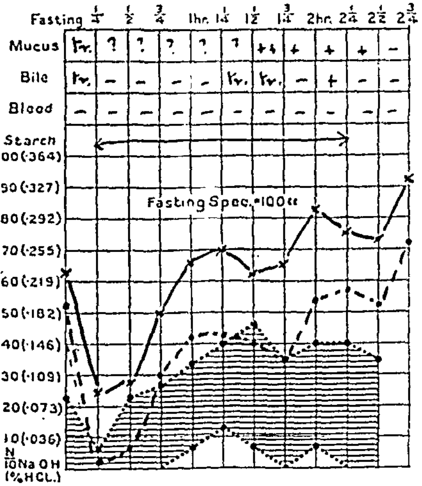
Part II.

Gastro-jejunostomy and its Sequelæ.

Our burden of responsibility in the case of dyspepsias following surgical intervention is necessarily greater than in the case of the original dyspepsia, and unfortunately the secondary dyspepsia is often more resistant to treatment than the primary disease. Only by a systematic study with clinical, radiographic, and chemical methods, of cases destined for gastro-jejunostomy, or in which a gastro-jejunostomy has already been performed, can we hope to elucidate the problems associated with this valuable operation and to explain the failures which still follow it in a sufficient percentage of cases to give cause for concern.

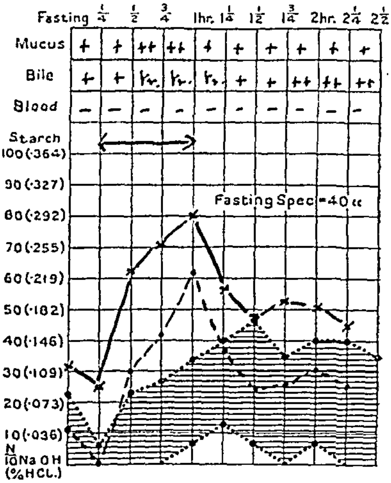
The faults and complications of gastro-jejunostomy include: (1) a too patent stoma, (2) a too narrow stoma or a mal-adapted loop with a "vicious circle" effect, (3) an improperly placed stoma, (4) ulceration at or near the stoma, (5) stenosis of the stoma secondary to ulceration, and (6) in the case of gastric ulcer, a failure to promote healing or a recurrence of the original lesion. Some of these errors and complications are theoretically, though not always in practice, avoidable; others are difficult to avoid. It would be entirely outside my province to refer to questions of technique, but there is one general principle which has not, I think, been sufficiently observed and upon which some of my previous observations have a distinct bearing. Briefly the principle is this: *That no attempt should be made to circumvent mechanically a lesion which is producing no considerable mechanical disturbance of function.* "Considerable mechanical disturbance of function" is nearly always associated in one way or another with the behaviour of the pylorus and its influence upon emptying rate; it need not necessarily be held to imply demonstrable organic narrowing of the pylorus or duodenum or indisputable delay. A reference to the history of gastro-jejunostomy will help to bear out my meaning. The operation was originally performed for pyloric obstruction due to growth, and was later employed in pyloric stenosis. So remarkable was the relief afforded in these conditions, for which it still remains the operation of choice in most cases, that it was next applied (still with some reason and often with success, because of the common association of "pyloric spasm" or "functional stenosis") to the treatment of non-obstructive duodenal ulcers of old standing; and then for no adequate physiological reason to non-obstructive duodenal ulcers of recent origin, and to chronic ulcers of the lesser curvature. The results of the operation are increasingly less good and the percentage of recoveries increasingly smaller as the condition treated becomes more remotely unlike the condition for which the operation was originally devised. I believe it will be in accordance with general experience when I say that in chronic duodenal ulcer the results are better the more nearly the disturbance of function which has been produced approximates to the disturbance present in organic stenosis. Even if no pathological degree of delay is demonstrable by ordinary means, a case with deficient or low normal motility is more likely to respond well to gastro

CHART 20 A.



Duodenal ulcer. Climbing curve.

CHART 20 B.



Same case as 20 A after gastro-jejunostomy.

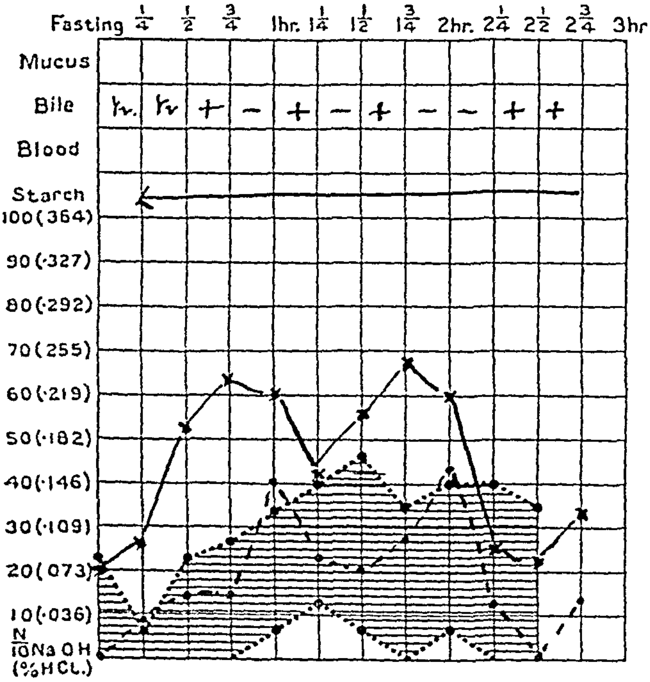
jejunostomy than one with increased motility; or, in terms of the test-meal, a case with a steadily climbing curve is more likely to give a good result than one with a high abrupt peak of acidity and rapid evacuation of the gruel. Whether the operation of gastro-jejunostomy performed for a chronic duodenal ulcer is successful or not in other respects, it generally results in healing of the original ulcer; this is due in the main to simple mechanical rest. But it has also been claimed that one of the principal aims of the operation is to produce a reduction of acidity by allowing a free entry of the duodenal secretions into the stomach. In practice the operation fails to achieve this in a considerable percentage of cases and the acidity may even be higher after the operation than before. In Hunter's[12] series of 40 cases of duodenal ulcer, pyloric ulcer, and ulcer of the body, in which 10 had a simple gastro-jejunostomy and 21 gastro-jejunostomy combined with occlusion of the pylorus, the free acidity "remained high" in 32 per cent., became higher in 23 per cent., and was abolished in 45 per cent. of cases. Sherren[19] has recently stated that "We have yet to learn what is the cause of failure to reduce gastric acidity by gastro-jejunostomy." I believe that the causes of failure to reduce acidity are not really far to seek, but it is evident that we require to know more about the conditions obtaining before the operation than the mere degree of acidity at one hour and the nature and situation of the lesion—information with which the surgeon is sometimes content. The most important additional items of information required are: (1) The rate of emptying of the stomach, and (2) the degree of tonicity present. *The quicker the rate of emptying and the greater the hypertonus the greater will be the liability to persistent hyperacidity. The slower the rate of emptying and the closer the approximation to a condition of hypotonus the greater will be the probability of efficient neutralisation.* The fractional test-meal gives valuable direct information in regard to emptying time and indirect information, as judged by the character of the curve of acidity, in regard to tonus. In the presence of an abrupt peak of acidity and rapid emptying, as shown in Chart 14, it is difficult to see how gastro-jejunostomy can achieve a reduction of acidity. The emptying-rate is already too rapid and the hypertonus present in such cases must throw a great strain upon the anastomosis. It is most unlikely that neutralisation of acidity will occur in cases of this kind and the conditions are ideal for the production of secondary ulceration. With a climbing curve as in Chart 20 A, however, and a normal rate of emptying the operation offers a better prospect of success. Even in this case the hypertonus of the organ was too great to permit of an efficient reduction in acidity during the digestive phase. Charts 21 A and B are from a case with well-marked hypotonus in which an efficient neutralisation was achieved. There is a greater liability to gastro-jejunal ulcers in young adults and in cases with a short dyspeptic history or recent hæmorrhage; this liability may be related to the fact that hypertonus is a more common attribute of youth, and that with recent ulceration there has been no time for the development of secondary loss of gastric tone. The cases in which a really satisfactory reduction of acidity results are those in which gastric tonus before the operation is normally low or has been lessened by prolonged fatigue; the efficient reduction of acidity in gastric ulcer and old-standing pyloric stenosis supports this contention. Apperly[20] attributes high acidity persisting after gastro-jejunostomy to defective reflux forces in the duodenum and jejunum and argues that persistent hypertonus is not a sufficient explanation because it was not always radiographically demonstrable in his cases. Whether the fault be in the stomach or the jejunum the rapid emptying after gastro-jejunostomy, if accompanied by an excess of intra-gastric over intra-jejunal tension, must tend to counter-balance the neutralising effects of artificial reflux.

In the light of modern experience it seems fair to insist that no gastric surgery, other than urgent surgery, should be undertaken for the relief of symptoms due to an active ulcer without a preliminary fractional gastric analysis as well as a radiographic examination. *The most important contra-indications to gastro-jejunostomy are a short history, a well-marked hypertonus, a high abrupt curve of acidity, and* *rapid emptying. The most reasonable indications for operation, apart from obvious stenosis, are a long history, a subnormal tonus, a slowly climbing curve, and slow emptying.*

A consideration of the cases described hereunder and of their test-meal findings may serve to indicate the utility of gastric efficiency tests in assessing the suitability of cases for operation and in studying the post-operative dyspepsias. In citing cases in which operation failed to give relief, or produced new symptoms, I would not have it thought that it is my intention to belittle the achievements of abdominal surgery. On the contrary, I believe that the advancement of our knowledge of the irritative and mechanical dyspepsias owes more to surgery than to any other branch of our art.

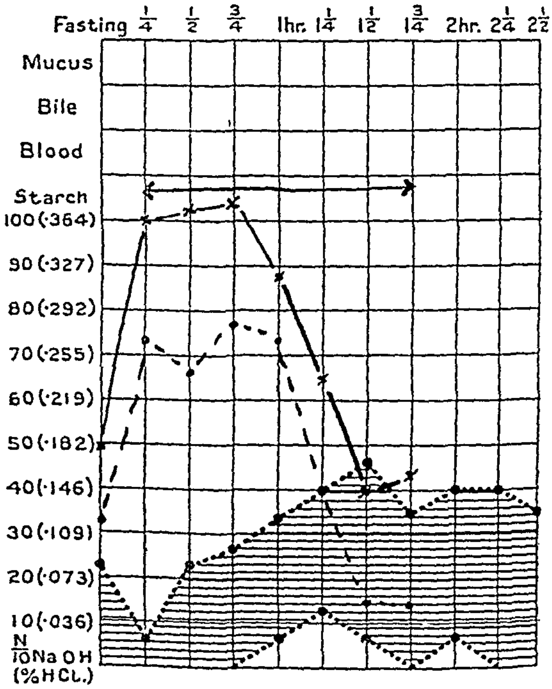
Charts 20 A and B are from a case of chronic duodenal ulcer with a climbing curve but no marked delay in emptying.

CHART 21 A.



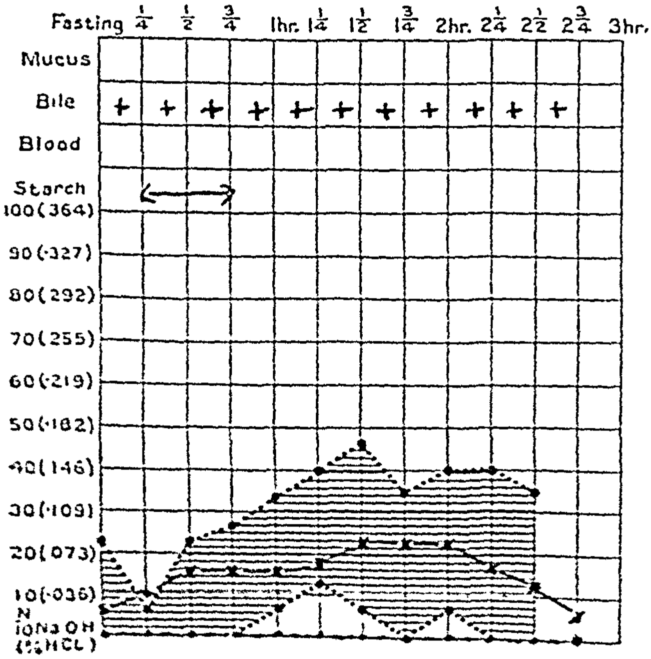
Pyloric stenosis with dilated stomach.

CHART 22 A.



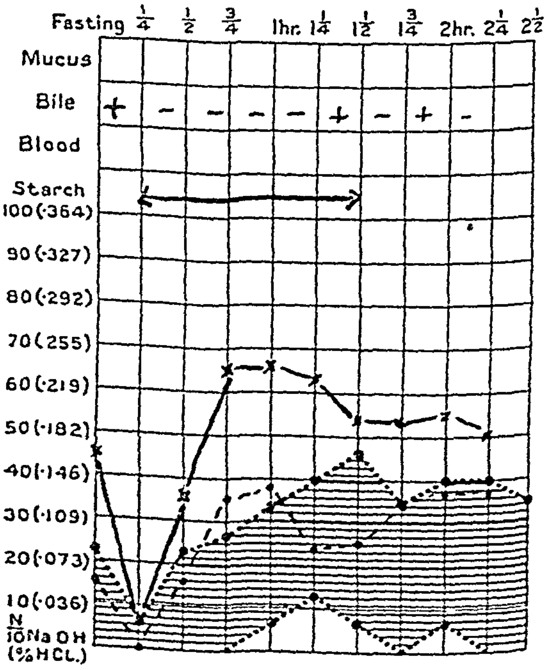
Duodenal ulcer with well-marked hypertonus.

CHART 21 B.



Same case as 21 A after operation.

CHART 22 B.



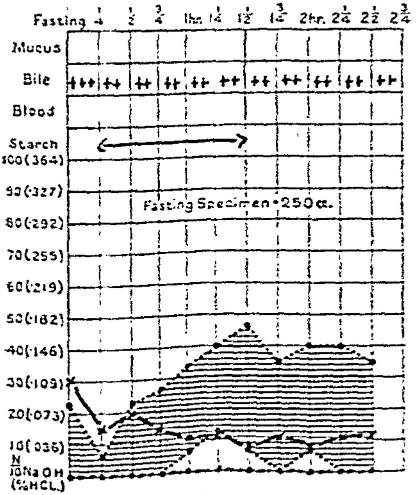
Same case as 22 A after gastro-duodenostomy.

Gastro-jejunostomy was performed with relief of symptoms. It will be noticed that the rate of emptying is reduced by half and that there is free bile regurgitation, indicating an efficient stoma. Although there is still hyperchlorhydria at one hour, the acid of the fasting secretion has fallen within normal limits and the duration of the hyperchlorhydria is reduced.

Charts 21 A and B are from a case of pyloric stenosis with gastric dilatation. The presence of bile at frequent intervals before operation, and in spite of the stenosis, suggests that gastric tonus must be low. The operation was *completely successful both in draining the stomach* and in securing neutralisation of acidity. Subjective symptoms were also relieved.

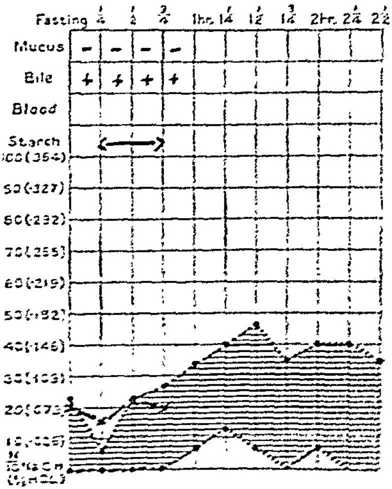
Charts 22 A and B are from a case of chronic duodenal ulcer adherent to the pancreas. There was well-marked hypertonus. After gastro-duodenostomy the acidity fell within normal limits and symptoms were at first relieved, but there was a recurrence of ulcer symptoms within two years.

CHART 23.



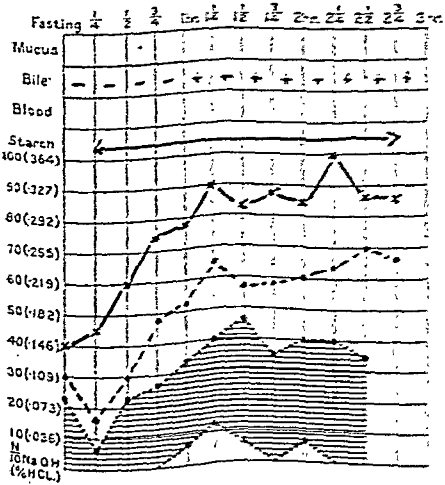
Gastro-jejunostomy. "Vicious circle" [illegible]

CHART 25.



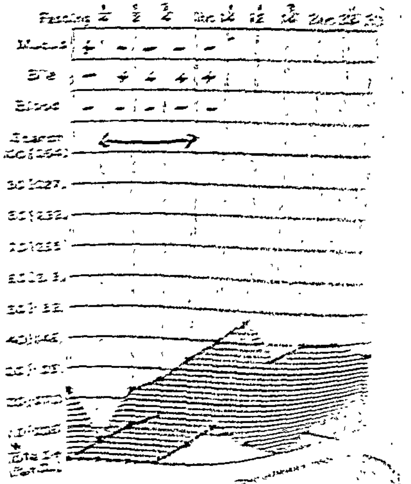
Gastro-jejunostomy [illegible]

CHART 24.



Gastro-jejunostomy. [illegible]

CHART 26.



[illegible]

Chart 23 is from a case of gastro-enterostomy performed for an ulcer near the pylorus some years previously. In this case a diagnosis of "vicious circle" was evident on the history of profuse bilious vomiting. In spite of the normal emptying-rate there were 250 c.cm. of bile-stained fluid in the fasting specimen. At operation the diagnosis was shown to be correct and the jejunum was found to be flattened against the stomach.

Chart 24 is from a case of gastro-jejunostomy for duodenal ulcer followed by recurrence of ulcer symptoms. The only possible conclusion to be drawn from the curve is that stenosis both of the pylorus and the stoma is present, for it is a typical curve of simple pyloric stenosis. Bile found its way into the stomach in the latter half of the meal only. The diagnosis was confirmed at operation.

Chart 25 is from a case of lesser curvature ulcer persisting after gastro-jejunostomy. The very rapid emptying and the complete achlorhydria have not facilitated healing, and a radiogram showed that the anastomosis was made so far to the pyloric side of the ulcer and its incisura that no adequate reduction of tension in the fundic portion was achieved. The case is one of many which suggest that the presence of acid is not an essential factor for determining the perpetuation of an ulcer.

Chart 26 is from a case of gastro-jejunostomy with a too effectual stoma performed for reasons unknown. There was nothing in the history to suggest ulcer. The result was excessively rapid emptying causing diarrhœa and malnutrition with deficient gastric and pancreatic digestion. X ray examination showed complete evacuation of the heavy barium meal in ten minutes. The patient had on one occasion noticed fragments of hard-boiled egg in the stools within half an hour of eating it. The stools contained soaps, fatty acids, and meat fibres in excess of normal.

In my first lecture I showed that we have in the fractional test-meal a useful standard of motility or emptying-rate. In the present lecture I have indicated that of all the functions of the stomach requiring instrumental study the motility or emptying-rate is the most important. By a correlation of emptying-rate with the curve of acidity we can obtain an insight into the functional efficiency of the pylorus and the general muscular efficiency of the stomach which may greatly aid us in our clinical decisions and save us from therapeutic errors.

RECAPITULATION.

By way of recapitulation, I should like to direct attention once more to certain of the conceptions which I have attempted to define in the course of this review. Firstly, there are two main types of dyspeptic reaction—the *immediate* and the *delayed* (or those associated with a recently filled or an emptying stomach). Secondly, the causal or provocative factors are of two main types, the *pressor* and the *depressor*. Thirdly, the dyspeptic reactions are determined in part by these causal factors, but in part also by the physiological type or gastric habitus of the individual, and the gastric habitus again (when variant from the normal) is of two main types, the *hypersthenic* and the *hyposthenic*.

Immediate pain or discomfort is the common response with the hyposthenic habitus and in dyspepsias resulting from depressor influences. It is thus encountered more frequently in the female sex and in association with general debilitating diseases. It may also be encountered in the irritative dyspepsias if these develop in a patient with the hyposthenic habitus or with general debility; under such circumstances the syndrome of gastric ulcer may be reproduced.

Delayed pain or discomfort is the common response with the hypersthenic habitus or in dyspepsias resulting from pressor influences. It is thus encountered more frequently in the male sex and in association with central or reflex irritative causes. If any of these causes are present in association with the hypersthenic habitus the symptoms of duodenal ulcer may be reproduced. The more circumscribed the focus of irritation and the more nearly it is situated to the stomach the more sharply defined do the symptoms become, but even in a "worry" or "fatigue" dyspepsia we can sometimes detect the characters of the ulcer syndrome. If an irritative focus is developed in association with the normal habitus, which is present in from 70 to 80 per cent. of the population, the liability to dyspeptic symptoms is less than in the extreme physiological types and local symptoms are more in evidence.

Finally, whether we are concerned with clinical symptoms such as pain or nausea, or with radiological or chemical symptoms such as hypertonus, hypotonus, hyperchlorhydria, or hypochlorhydria, it is important to appreciate that each response expresses merely an exaggeration or depression of a normal reflex. The dyspeptic reaction cannot of itself inform us as to the exact nature of the underlying disease any more than dyspnœa or tachycardia can inform us as to the exact physical condition of the heart or the causes disturbing its function. Nevertheless an estimate of the nature and degree of the functional derangement is essential both for diagnosis and prognosis, and may materially influence choice of treatment.

Throughout these lectures I have tried to strike a just balance between what may, pardonably perhaps, be termed the field-observations of the physician, working as a naturalist, and the more detailed observations of the physician seeking to apply to his work the methods of the scientist—observations which must always be complementary to one another. In studying the disturbances of gastric function we rely first and foremost on our old-established clinical methods of interrogation and physical examination; for the proper application of these and other methods an understanding of normal function is essential. In the second place, we may have recourse to the physical methods of the X ray department and the chemical methods of the laboratory; from neither of these departments, excepting in the case of extreme deviations from the normal, or for the express purpose of confirming or allaying a suspicion of local organic disease, can we expect a final opinion. Once again, therefore, it falls to the physician, this time in a judicial capacity, to balance the evidence which has been furnished and to frame the final conclusion. Although accuracy in diagnosis is often enhanced, judgment, which is the most difficult part of our art, is never immediately made easier by the introduction of new tests or by the elaboration or modification of old ones. For this reason it is important from time to time to attempt, in the interests of practical medicine, a broad review of the state of our information on subjects of this kind.

I must gratefully acknowledge the assistance which I have received from my colleagues and from the references to the literature which have been necessary. I am, however, very conscious of the deficiencies of this survey, and can only claim that I have endeavoured to present as comprehensive a view of the subject as the time at my disposal would permit. If my remarks have been successful in emphasising the importance of symptoms and the need for further clinical research into the nature of symptoms, they will not have been altogether in vain. Always more attracted by the broad field of clinical study, I have made a few small excursions into the domain of physiology and morbid physiology, hoping to gain thereby some of the advantages which come from an altered point of view. I have not been disappointed. Nevertheless, as experience grows, and with it the opportunity of testing the practical value, the corrective influence, and also the limitations of the accessory diagnostic methods, the greater becomes my interest and belief in the older methods of observation, which no laboratory can teach, but which the contributions of my predecessors in this post and the tradition of our ancient College have done so much to foster.

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IODINE AS AN AID TO SURGERY IN THE TREATMENT OF EXOPHTHALMIC GOITRE.

BY ARNOLD S. JACKSON, M.D.,
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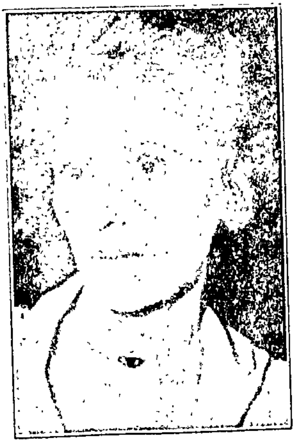
SIXTY-THREE out of 66 patients with exophthalmic goitre, operated on at the Jackson Clinic between October, 1922, and October, 1924, were treated with iodine. In this series of cases there have been no surgical mortalities, neither have there been any medical deaths. No patient has been refused operation, and thyroidectomy or ligation has been performed with considerable risk in several instances.

The successful treatment of this group of patients may be attributed to the use of iodine. The introduction of iodine in the treatment of exophthalmic goitre is due to Plummer in March, 1922. Not only did this revolutionise our ideas concerning the effect of iodine in this disease, but it provided a means of successfully combating the dreaded clinical post-operative hyperthyroidism. It is almost two years since I have encountered this latter condition, whereas it was formerly considered a frequent and often fatal complication.

FIG. 1.



Case 33871. Advanced case of exophthalmic goitre five days following thyroidectomy. Patient had been bedridden for six months previous to admission. Ten days after treatment with iodine a test ligation was done. Three days later a thyroidectomy was performed with only slight reaction.

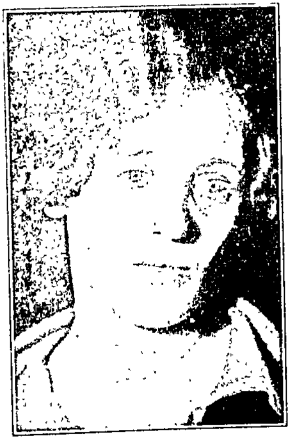
In this series of cases all but four received iodine pre-operatively. At first it was necessary to proceed with considerable caution and to experiment on each patient in the endeavour to ascertain the correct amount of iodine to be administered. Plummer first determined the optional dose to be ten drops of Lugol's solution (liquor iodi compositus) well diluted with water. Three of the patients in my series were given this dosage during a period of three months or longer (one case, six months) in order to discover the ultimate effect of iodine in cases of exophthalmic goitre. Although marked improvement was noted in each case, there was no indication at any time of a clinical cure; a low-grade hyperthyroidism persisted at all times with a basal metabolic rate averaging about plus 20 per cent. This is what might have been expected, as it is probable that iodine merely puts the thyroid gland at rest temporarily and allows it to complete its normal secretion.

During my early experience in thyroid surgery one or more ligations, or a multiple-stage thyroidectomy, was performed at the least indication. As we gained further knowledge of the remarkably beneficial effect of iodine the number of preliminary operations was reduced, so that the last 25 thyroidectomies have been performed without any previous operations. I would not hesitate to ligate now, however, if in doubt, and I urge others to proceed with similar caution.

Method of Administration of Iodine.

In carrying on investigations with iodine in various cases, I soon found that the degree of reaction following operation could be lessened by the following method: the dosage of Lugol's solution was gradually increased to 30 drops a day for all cases until 48 hours before operation, when 40 or even 50 drops were often given. Likewise, the period of pre-operative preparation was reduced to five days or less in the majority of cases. Patients have frequently been allowed to take the Lugol's solution at home and submit to operation on the morning after entering the hospital. The reaction was also reduced by the administration of Lugol's solution by proctoclysis as well as by the mouth, while the patient was convalescing after operation. Patients were all able to take nourishment on the day following operation; they were up and about on the fourth day, and usually left the hospital one or two days later. This régime did not include patients with badly decompensated hearts and visceral degeneration, nor the extreme cases of hyperthyroidism occasionally encountered. Patients who are seen for the first time in a crisis respond almost immediately to treatment with iodine, and there is cessation of vomiting and diarrhœa within 48 hours. These patients necessarily require more care, and a longer period of preparation.

FIG. 2.



Same patient three months after thyroidectomy. Weight had increased from 65 lb. on admission to 155 lb. Under iodine the metabolic rate dropped from plus 75 per cent. to plus 56 per cent. Three weeks after operation the rate was plus 7 per cent.

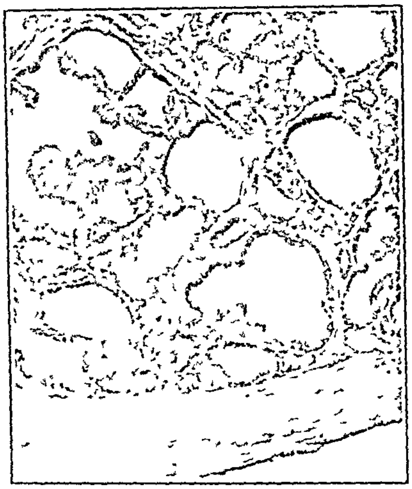
Clinical Improvement After Administration.

The clinical improvement following the administration of Lugol's solution usually becomes evident on the second or third day. First of all there is a cessation of the numerous purposeless movements of the extremities. Patients no longer thrash about in bed and chafe their arms and legs. The frightened, anxious, staring expression gives way to one of calm and composure. Exophthalmos persists, likewise the thrill and bruit, but in some cases there is a certain lessening of these clinical signs. Insomnia gives way to quiet restful sleep. With reduction in the rate of metabolism, the body tissues are no longer oxidised at such an extremely rapid rate and there is a marked gain in weight. The pulse-rate is noticeably slower and patients are no longer kept awake by a throbbing aorta or disturbed by the pulsations of the carotids

Bedridden patients are able to walk about after a few days, so speedily do they gain in strength.

In proportion to the degree of clinical improvement there was a reduction in the basal metabolic rate, which averaged plus 19 per cent. in this series. In every case in which the administration of Lugol's solution was continued through necessity or choice for more than the average preparatory period, there was a still further reduction in the rate. As I knew that patients could not be clinically cured by the use of iodine, and as I was confident that they would undergo thyroidectomy safely, I have felt there was no indication for prolonging the period of preparation merely to gain a temporary improvement beyond the point where the patient could be considered a good operative risk.

FIG. 3.



Typical exophthalmic goitre: no pre-operative treatment with iodine had been given. Note the characteristic infolding of the epithelium and the large epithelial cells.

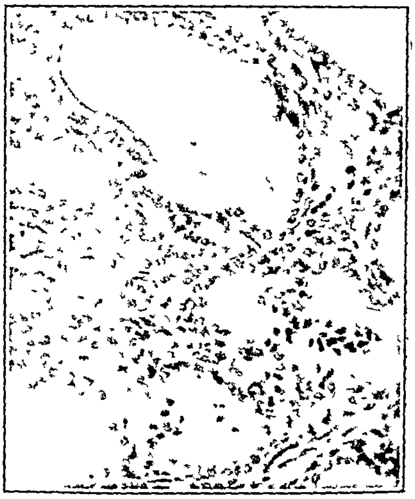
Factors Reducing Operative Mortality.

Undoubtedly factors other than iodine therapy are important in the great reduction in operative mortality in exophthalmic goitre. Of these, I believe the following are paramount. The development of operating teams whose work is so coordinated that the element of time is no longer of importance in considering the risk of operation. The surgeon who persists in performing the many trivial details of every operation cannot hope to have his results compare favourably with those of the highly perfected teams developed by the Mayos and Crile. Next in importance is the fact that patients are now seen by the surgeon in the early stages of the disease before marked visceral changes have occurred. This is due to a widespread dissemination of knowledge pertaining to the symptoms of exophthalmic goitre. The people will soon class the physician who fails to diagnose this condition until a crisis has occurred with the one who remains oblivious to the symptoms of appendicitis until the appendix has ruptured. Brilliant diagnoses of early cases of toxic goitre are now frequently being made by the family physician.

Choice of Anæsthetic.

Finally, the improved methods of local and general anæsthesia have been of inestimable value in lowering operative mortality. In my group of cases 95 per cent. of the patients were given the morphine scopolamine local anæsthesia. Other clinics report equally good results with other forms of anæsthesia. The fact that in this series of cases there was not a single instance of post-operative pneumonia, injury to the vocal cord, post-operative hæmorrhage, or, in fact, any complication, argues favourably for this method of anæsthesia. Considerable tact and skill are required in handling patients with goitre, and the successful outcome of the case may be considerably influenced by the nurses and physicians in direct charge of the patient. We have not found it necessary to operate while the patient is in bed, neither have we kept the patient uninformed of the date of operation. When patients are given an opportunity to converse with those who have had successful operations, the fear and hysteria are generally promptly dissipated.

FIG. 4.

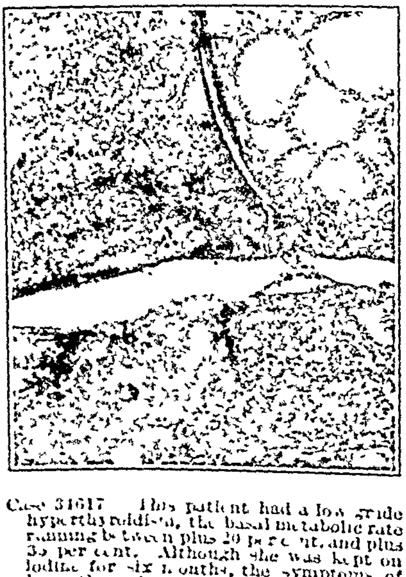


Case 12175. The pathological appearance of the gland in a case of exophthalmic goitre following pre operative treatment with iodine. The gland tending to assume a normal apearance, colloid replacing areas of hyperplasia. In certain sections, however, well-defined areas of hyperplasia still appear.

End-Results.

Sufficient time has not elapsed since the institution of treatment to consider the end-results in this group of patients, but a survey of their present condition may give some clue to the ultimate prognosis. Only 25 of the 68 patients at the time of admission were carrying on their full occupations: 15 were partially incapacitated and 28 were either bedridden or totally incapable of performing their routine duties. Fifty-two of the patients are now performing their regular duties, but are observing general post-operative instructions, including frequent periods of relaxation and rest. The remaining 16 are capable of performing full work, but are now being restrained until they have had a longer post-operative rest period. With many of these people it is a question of finance; one woman, for example, finds it necessary to cap 18,000 battery cartons every day in order to support herself. The fact that none of these patients were hospitalised an average of more than five days is an answer to those who would advocate measures other than surgery because of the long period of restraint from work. Moreover, these patients are not partially cured and still running an intermittent or low-grade hyperthyroidism with its resultant

FIG. 5.



Case 31617. This patient had a low grade hyperthyroidism, the basal metabolic rate ranging between plus 20 per cent. and plus 35 per cent. Although she was kept on iodine for six months, the symptoms of hyperthyroidism persisted and the rate never dropped below plus 18 per cent. The pathological picture shows a marked tendency for colloid to replace hyperplasia.

damage to the cardio-vascular-renal system. They are restored to health, with a normal metabolism. The average gain in weight three months after the operation has been 15 lb., and at the end of six months 28 lb. Two patients have gained more than 70 lb., and many have gained 40 or 50 lb. since operation.

Study of 63 Patients with Exophthalmic Goitre Treated with Iodine.

Number of operations (including ligations)	..	91
,, thyroidectomies	..	63
,, deaths	..	0
Average B.M.R. before treatment	.. plus	49 per cent.
,, ,, after ,,	..	30 ,,
,, ,, 3 weeks after thyroidectomy	..	8 ,,
Average weight on admission	..	110
,, ,, 2 months after operation	..	125
,, ,, 6 ,, ,,	..	136

Effect of Iodine on Basal Metabolic Rate and Pulse-Rate.

Case No.	Before treatment.		After treatment.		Case No.	Before treatment.		After treatment.	
	B.M.R. per cent. plus.	Pulse-rate.	B.M.R. per cent. plus.	Pulse-rate.		B.M.R. per cent. plus.	Pulse-rate.	B.M.R. per cent. plus.	Pulse-rate.
31537	62	142	43	120	38536	52	118	45	110
33251	92	150	74	132	38724	70	130	52	118
33728	69	128	48	118	38619	125	142	74	116
32522	38	116	21	90	39182	68	96	50	60
35440	42	112	26	84	39892	40	88	34	84
35293	45	122	28	110	39928	64	120	28	78
35794	61	132	30	82	39337	98	138	63	94
35901	74	140	51	90	40074	38	98	18	90
36234	62	120	42	116	40341	22	82	16	80
33871	75	112	50	110	40302	54	114	32	92
35059	44	120	28	92	40556	58	120	24	110
34126	39	146	25	104	40653	62	96	30	74
35588	32	104	21	80	40648	24	80	14	76
36634	38	98	23	82	40697	68	96	45	88
37193	29	100	20	78	40966	44	112	28	71
32123	30	98	18	76	41120	54	90	32	78
37080	32	110	20	80	41171	48	130	40	122
36397	52	130	28	106	41214	61	122	40	116
30397	39	126	26	88	34617	34	98	12	90
32821	34	108	22	92	41412	24	92	17	86
34603	66	126	39	104	41549	50	108	31	76
34102	39	108	25	80	41864	44	94	24	82
33362	25	90	14	74	41877	67	112	37	100
32186	37	122	22	100	31443	52	106	18	86
32920	30	98	19	72	41825	22	92	17	82
37225	64	106	35	90	41269	60	118	44	112
36058	62	132	36	110	40953	48	130	20	86
34793	47	130	28	68	42175	54	98	34	80
33010	20	90	12	70	42208	34	94	16	72
39042	47	120	30	98	30262	64	130	42	108
39392	34	90	18	82	42625	30	124	16	100
37770	41	106	24	100					

Effect on Basal Metabolism.

The average basal metabolic rate on admission was plus 49 per cent. After preliminary rest and treatment with Lugol's solution this rate dropped to plus 30 per cent., and three weeks following thyroidectomy the rate was plus 8 per cent. Two patients have developed recurrences; both were operated on at a time when the factor of post-operative hyperthyroidism was still a dreaded possibility. One patient received no Lugol's solution; the other had only a small amount. In both cases it was necessary to operate as soon as possible, and operation was technically difficult because of the vascular, friable nature of the gland due to increased collateral circulation following ligations. In the haste to complete the operation without too long delay sufficient gland was not removed. Now, I frequently remove four-fifths of every gland. A second operation has been performed on one of these patients, and to date he has gained 55 lb. The other patient is temporarily under control with Lugol's solution.

In a previous article attention was called to the fact that iodine causes a marked change in the pathological picture of the gland, colloid tending to replace areas of hyperplasia and the gland tending to assume a normal appearance.

Summary.

The use of iodine, as advocated by Plummer in the treatment of exophthalmic goitre, is the most important factor in reducing the operative mortality in this series.

The development of a highly perfected operation, with the consequent reduction in time, the fact that patients come to operation at an early stage in the disease, and improved methods of anæsthesia, are other factors tending to reduce the operative mortality.

Iodine will not permanently cure, but merely temporarily alleviate the symptoms of exophthalmic goitre.

The use of iodine will prevent or terminate a fatal crisis as well as post-operative hyperthyroidism.

The necessity for ligation is eliminated in 90 per cent. of cases by the use of iodine.

Patients are given 30 drops of Lugol's solution daily for three days and 40 or 50 drops for one or two days. Following operation Lugol's solution is administered by mouth and by proctoclysis.

The average stay in the hospital is reduced to five days, as the patients are able to take the pre-operative treatment at home.

Within 48 hours after the ingestion of iodine there is a marked abatement of all the symptoms of hyperthyroidism. The nervous, vascular, and digestive systems are all favourably influenced.

There is an average reduction of plus 19 per cent. in the basal metabolic rate.

SOME TOXIC CONDITIONS FOLLOWING ETHER ANÆSTHESIA

AND THEIR SUCCESSFUL TREATMENT.*

BY R. J. MINNITT, M.B., CH.B. LIVERP.,

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IN THE LANCET of Sept. 27th, 1924, Pemberton and Cunningham showed that ether anæsthesia produced a hyperglycæmia, not only in the diabetic, but also in the normal individual, and they there stated that in the diabetic case the risks run were due to anæsthesia and shock, both of which produced the hyperglycæmia. From the following account of five selected cases in an investigation undertaken by me I shall try and show: That to a lesser extent the same is true in the non-diabetic; that there is a definite relationship between this hyperglycæmia, associated with ether anæsthesia, and the toxic symptoms which follow; also, that the treatment prescribed for their amelioration should be on the lines which have been found so successful in the case of the diabetic. These toxic symptoms can be briefly described as vomiting, pallor, or shock, and acidosis or ketonuria.

Case Records.

CASE 1. *Resection of the Stomach.*—The blood-sugar was estimated before the administration of the anæsthetic, and each half hour until its completion. *The amount of ether used is shown during each interval.* In this case there were no post-anæsthetic toxic symptoms, and the graph *(Fig. 1) shows that there is a definite rise in blood-sugar,* varying with the length of administration of the anæsthetic, but no further secondary rise, the conclusion drawn being that where the blood-sugar falls after the anæsthetic to a more or less normal level, and does not rise again, the patient suffers little, if anything, from toxic symptoms, such as vomiting, pallor, or acidosis.

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* Condensed from a paper read before the Liverpool Medical Institution.

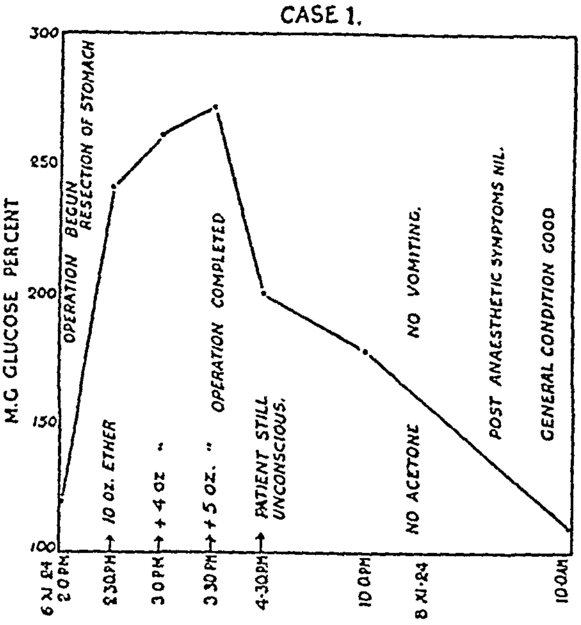

Fig. 1.

Case 2 shows the sugar-tolerance test carried out before and after the anæsthetic in an operation for *double inguinal hernia*. The left-hand part of the graph (Fig. 2) portrays the blood-sugar curve after giving 50 g. of glucose by the mouth the day before the operation. The dotted lines in the centre of the graph show the effect upon the blood-sugar of the anæsthetic, and the right-hand part of the graph the rise in blood-sugar after the administration of 50 g. of glucose the day following the operation. The conclusion drawn from these tests is that the anæsthetic appears in some way to impair the efficiency of the pancreas in dealing with sugar.

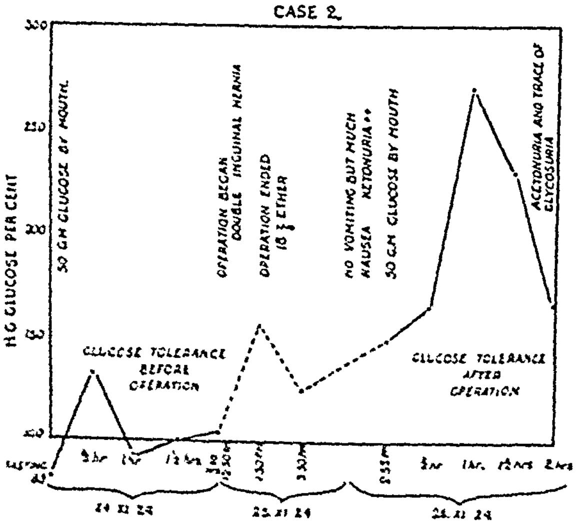

Fig. 2.

Case 3. *Gastro-enterostomy.*—The rise in blood-sugar and its fall during and after the anæsthetic is shown (Fig. 3), with a secondary rise the following day, accompanied by toxic symptoms, such as vomiting, pallor, and acidosis. Upon the administration of insulin there is seen the fall in blood-sugar, and the simultaneous improvement in the condition of the patient.

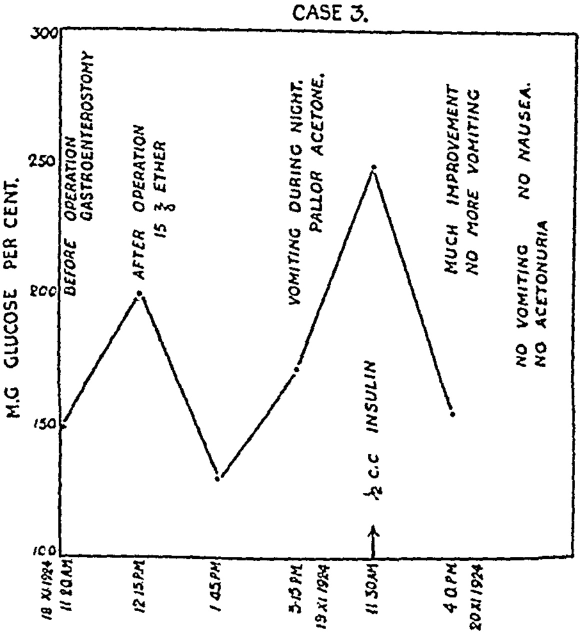

Fig. 3.

Case 4. *Ectopic Gestation and Appendix.*—The post-anæsthetic toxic symptoms were very severe, and the patient was unsuccessfully treated with alkalies. The graph (Fig. 4) shows how the blood-sugar did not fall in amount until after the third dose of insulin, when the condition of the patient became better. This suggests that the administration of insulin may have to be prolonged until the blood-sugar is reduced, for it is not until then that improvement takes place.

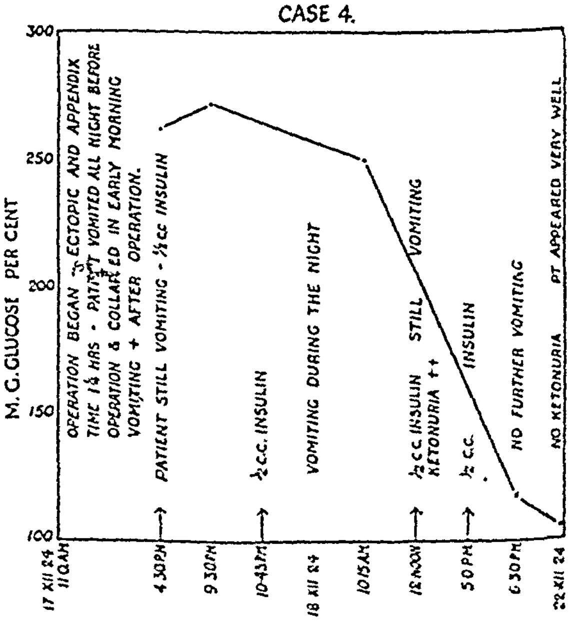

Fig. 4.

Case 5.—*Double hernia* shows the effect of the administration of insulin and glucose given immediately upon the conclusion of the anæsthetic, there being no secondary rise of blood-sugar nor development of toxic symptoms. (Fig. 5.) Hence insulin can prevent or mitigate toxic symptoms before they arise.

In the *Journal of the American Medical Association* of August 4th, 1923, Thalhimer, of Milwaukee, reported the treatment of three cases of post-operative non-diabetic acidosis by means of insulin. In one case there was no improvement with gastric lavage and glucose, but three hours after the hypodermic injection of insulin vomiting ceased. In another case two doses of insulin were required before improvement took place. In the third case, that of a child of 5, too small a dose of insulin was given to alter the acidosis or prevent the blood-sugar from rising. Twice as much was given the following morning, which had a definite effect upon the blood-sugar, and vomiting ceased.

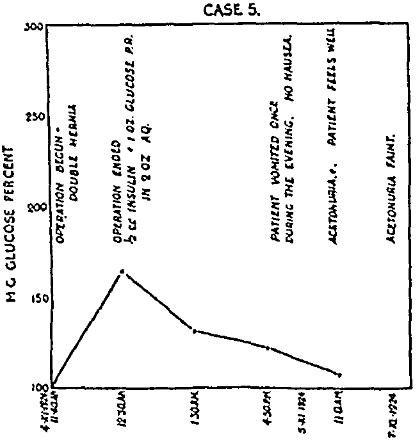

FIG. 5.

In the same journal of Dec. 13th, 1924, appeared an article describing the treatment of three cases of shock after operation, with glucose and insulin, but there is no mention of any blood-sugar estimations having been made.

From the account of these cases I am surprised at the large doses of insulin used, and it also occurs to me that it is very difficult to differentiate between the toxic effects of the anæsthetic upon certain patients, and the result of shock. One thing, however, seems certain, that we have in insulin a remedy for the toxic symptoms following ether anæsthesia, and that in some mysterious way, not yet fully elucidated, these conditions are associated with something which affects blood-sugar.

SUSSEX PROVIDENT SCHEME.—The annual meeting in connexion with the Sussex Provident Scheme was held at Brighton on March 21st. Very encouraging figures were presented. In January, 1924, it was shown there were 93 groups with 6699 subscribers and 10,592 dependents, whereas in January this year there were 187 groups with 10,456 subscribers and 10,044 dependents, a total of 20,500 people entitled to the benefits of the scheme; 620 subscribers and their dependents had received in-patient treatment for a period of 13,723 days at a cost of £1562 6s. 3*d*., and 1893 people had made 10,741 attendances for the various specialised forms of out-patient treatment at a cost of £957 19*s*. 3*d*. An abnormal amount of sickness was experienced during the year and, in consequence, it had only been possible to pay 90 per cent. of the claims of the hospitals instead of the full amount as had been done hitherto. The whole of the administrative expenses amounted to only £123 12*s*. 3*d*. Details of the allocation of £5500 to the local hospitals for services rendered to subscribers during 1924 were given in THE LANCET of Feb. 14th.

DIFFICULTIES IN THE DIAGNOSIS OF THE ACUTE PHASE OF EPIDEMIC ENCEPHALITIS IN CHILDREN.

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THE experience presented here was obtained in a fever hospital where encephalitis was only one infectious disease among others. The later manifestations of encephalitis are usually sufficiently striking to make the diagnosis fairly sure, but during its very early stages the symptoms are sometimes merely those peculiar to acute fevers in general. It is at the onset that difficulties in diagnosis are met with on a large scale. The first part of this paper deals with the diseases which in practice were found to simulate encephalitis; the second part draws attention to certain symptoms through a misunderstanding of which errors arose.

DISEASES WHICH SIMULATE ENCEPHALITIS.

Between the months of March and July, 1924, encephalitis was epidemic in Glasgow: 81 children (ages 0–10) certified encephalitis were admitted to Ruchill Fever Hospital, and of that number 40—that is, 47·5 per cent.—were considered to be definite cases. There was, therefore, a diagnostic error of 52·5 per cent. The diagnostic error for 121 adults certified encephalitis during the same period was 30·2 per cent. Encephalitis, therefore, is more difficult to diagnose in children than in adults. On examination four months after the onset, 37 of the 40 cases considered to be encephalitis were found to be suffering from sequelæ characteristic of the disease; none of the cases where the diagnosis was altered showed any of the later traits of encephalitis. The apportioning of the figures may, therefore, be taken as approximately accurate.

The 41 cases in which the diagnosis was altered were grouped thus:—

Gastro-enteritis with toxæmia	14
Tuberculous meningitis	13
Pneumonia	8
Rheumatic group	2
Septic sores	1
No appreciable disease	2
Early tuberculous peritonitis	1

The diseases most often confused with encephalitis in children were, therefore, gastro-enteritis, tuberculous meningitis, and pneumonia. Tuberculous meningitis is well recognised to be a stumbling block, but so far stress has not been laid on the other two conditions as being liable to mislead.

Gastro-Enteritis with Toxæmia.

Two of these cases were infants under one year. Both were in a marasmic state and were "lethargic." They were admitted with a history of squint, which on investigation was found to be due to incoördination of the eye-muscles aggravated by their weak condition. The remainder had a history, previous to admission, of vomiting, with or without diarrhœa, which was associated with delirium or drowsiness, and accompanied by an elevated temperature. Some had suffered from similar attacks on previous occasions, and these might be labelled cases of cyclical vomiting. The milder cases showed no symptoms while in hospital, except perhaps a slight drowsiness and a small elevation of temperature which quickly subsided. The more severe cases (four in number) presented symptoms, many of which are seen in encephalitis, and the following case may be quoted as an illustration of a severe toxæmia of gastro-intestinal origin:—

J. M. G., a boy aged 10 years, certified encephalitis, was admitted to hospital on his second day of illness. The previous morning he complained of intense frontal headache and severe abdominal pain. In the afternoon he had become drowsy and at night he was delirious, attempting to get out of bed. On admission he looked acutely ill. His lips were cyanosed and he sweated profusely; his pulse was of poor quality, and he lay in a restless delirium. His tongue was thickly coated and his mouth dirty. From time to time he vomited a greenish vomit and his breath was heavy with the smell of acetone. The stools were loose, green, and contained mucus. His temperature was high—viz., 102·5° F. For several days his temperature remained elevated and he remained in a similar condition, drowsiness alternating with the bouts of delirium. On being roused he was extremely irritable and mentally confused. His eyelids were drooping and suggested a double ptosis. He occasionally had sighing respirations. When the temperature fell he quickly improved and he was perfectly bright and normal in a week. During his illness the urine gave a strongly positive Rothera reaction. (Gerhardt's reaction was also positive.) The ketone bodies did not disappear from his urine till his fifteenth day in hospital. Lumbar puncture was done on his third day of illness after taking a series of specimens for blood-sugar estimation. The spinal fluid gave a faintly positive Rothera reaction, otherwise it showed nothing abnormal. The blood-sugar curve rose in one hour from 0·11 per cent. to 0·253 per cent., and did not regain its original level after three hours. On inquiry into his previous history it was found that he was subject to bilious attacks. Three months after dismissal he reported himself to the hospital. During the interval he had apparently been quite well.

When recorded on paper the fact that the trouble was *not* encephalitis seems obvious, but in practice the matter was not so simple. The association of delirium, sighing respirations, drowsiness, and temperature is common to both conditions. The drooping of the eyelids suggested a true ptosis, and during the epidemic encephalitis in children frequently began with vomiting and occasionally with diarrhœa. On clinical grounds the diagnosis was made on the prominence of the gastro-intestinal symptoms and the obtrusive odour of acetone in the breath, which was confirmed by the positive Rothera reaction given by the urine

Tuberculous Meningitis.

The nature of the disease is usually evident from clinical evidence alone, but confirmation, and in some cases, especially during an epidemic of encephalitis, the diagnosis depends on the examination of the spinal fluid. A diagnosis of tuberculous meningitis was made from the following findings in the spinal fluid:—

1. *Those Peculiar to Tuberculous Meningitis.*

(*a*) *Pellicle Formation.*—In tuberculous meningitis after standing from one-half to 12 hours the fluid usually clotted. There was no clot in encephalitis. [In the journals of the hospital is found the record of what was presumably a case of the meningeal type in which pellicle formation occurred. The post-mortem findings were those of encephalitis—namely, sleeve hæmorrhages, round cells, perivascular infiltration, and degenerated nerve cells. The meninges were infiltrated with mononuclears and plasma cells. No organisms were found.]

(*b*) *Differential Cell Count.*—Mononuclears were the predominating cells in the fluid from tuberculous meningitis, but polymorphs were usually also found even up to 60 per cent. The cells in encephalitis were mononuclears only and polymorphs did not occur.

(*c*) *Sugar Content.*—The sugar content of the fluid was reduced in tuberculous meningitis. The only accurate method of determining the lowest point is by quantitative means. Thus, the sugar content of fluids from seven cases of tuberculous meningitis varied from 0·019 per cent. to 0·036 per cent., as estimated by MacLean's method, whereas in a series of fluids from eight normal persons the sugar content varied from 0·050 per cent. to 0·065 per cent. The following rapid method for determining a diminished sugar content was evolved and found useful. On boiling together for two minutes exactly equal parts of Fehling's solution and the spinal fluid from a healthy subject or a case of encephalitis, and on examining immediately against a dark background, a red or brown opalescence is found. When fluid from tuberculous meningitis is employed there results either a green opalescence or else no reduction takes place. In all instances by transmitted light the boiled solution should remain blue.

(*d*) *Tubercle Bacilli in the Pellicle.*—The bacillus was found in 50 per cent. of cases.

2. *Those Common to Encephalitis and to Tuberculous Meningitis.*

(*a*) *A Clear Fluid Under Increased Pressure.*—The pressure in encephalitis was not usually so marked as in meningitis.

(*b*) *An Increased Cell Count.*—The count was usually higher in meningitis, but in several instances in children counts over 300 per c.cm. were obtained in encephalitis.

(*c*) *Increase of Globulin.*—The Nonne-Apelt reaction (Phase I.) was employed. This test must be performed immediately after the withdrawal of the fluid. If pellicle formation occurs the precipitation may be diminished, or even absent. This test was usually only faintly positive in the cases of encephalitis where it occurred (18 per cent.).

The findings showed great variation. Thus, in tuberculous meningitis clot did not always form; tubercle bacilli were not always found; mononuclears sometimes occurred alone, polymorphs being absent, and the sugar content of the fluid might be but little below normal. In encephalitis the fluid may be blood-stained, though this did not happen in the series in question; the pressure was not invariably increased, the cell-count was often within normal limits—i.e., under 5 per c.cm.—and globulin increase was inconstant. Lange's colloidal gold reaction gave a meningitic type of curve in cases of tuberculous meningitis. In encephalitis a luetic type of curve often occurred, but as a similar curve was found in several of the severer cases of gastro-enteritis with ketonuria (perhaps through alteration in the hydrogen-ion concentration of the spinal fluid) the consideration of its place in the routine examination of the spinal fluid is omitted. The results of this test seem to be of constant value only in the hands of an expert.

The following example illustrates the difficulties met with in a case clinically resembling both diseases, and illustrates *well the value of examining the spinal* fluid:—

J. M., a boy aged 4 years, certified encephalitis lethargica, was admitted to hospital on the fifteenth day of illness. The illness began with vomiting and headache. He became drowsy and suffered from time to time from pain on the right side of his face. On admission he complained of pain in the back of his neck. His head was slightly retracted and the neck muscles were rigid. The pupils reacted well. The abdominal reflex was depressed. Kernig's sign was indefinite. Pulmonary signs were absent. His appearance and history suggested tuberculous meningitis. There was no tuberculosis in the family.

Lumbar puncture after six hours' starvation: Cell count, 210 per c.mm., 6 per cent. being polymorphs. Nonne-Apelt test: Slight milkiness. Sugar: Green opalescence against a dark background on boiling with Fehling's solution. By estimation: 0·035 per cent. No pellicle formed on standing for 24 hours and no tubercle bacilli were found after centrifuging.

In favour of meningitis were the presence of polymorphs and the low sugar content, but the reading for this, 0·035 per cent., was not far below 0·050 per cent., the lowest figure in the series of normal fluids. The absence of clot was unusual in meningitis. The cell-count and the globulin increase would conform with either disease.

Three days later the head retraction was much less evident. There was ptosis of the left eyelid. The pupils were dilated and fixed. Continuous myoclonic movements of the muscles of the fingers and forearms were present. Both cheeks showed occasional twitching. The child's condition was very serious. The temperature had been swinging from 98° to 102° F., the pulse-rate had varied between 60 and 110; the respirations had crept up from 30 to 45.

Lumbar puncture repeated after six hours' starvation: Fluid clear under considerably increased pressure. Cell count, 200 per c.mm., 2 per cent. being polymorphs. Nonne-Apelt test: Definite milkiness. Sugar estimation: 0·024 per cent. Again no clot formed and no tubercle bacilli were found.

Two days later the child was obviously going to die. He was unconscious. The respirations were 60 and the pulse-rate and temperature still swinging. There was double ptosis; the left pupil remained dilated and fixed, the right being minutely contracted. The right arm and hand were rigid and held against the body in the position of tetany. The left arm made vague searching movements into the air.

There was abdominal retraction and retention of urine. Next day the boy died. At the post-mortem the gelatinous exudate at the base of the brain was found to be swarming with tubercle bacilli.

The variety of symptoms—viz., ocular palsies, myoclonic movements, rigidity, &c., though not uncommon in tuberculous meningitis, made the diagnosis doubtful from the clinical point of view, especially as encephalitis was rife at the time. The spinal fluid did not clot—a rare occurrence in tuberculous meningitis—and it happened that the bacilli were not found. The presence of polymorphs and the low sugar content alone made possible a sure diagnosis.

Pneumonia.

The source of confusion in these cases was the sudden onset accompanied by such symptoms as convulsions, twitchings, headache, drowsiness, delirium, meningism, vomiting, and pain in the side. These patients were usually admitted on the first or second day of illness when physical signs in the chest were indefinite. But the error in diagnosis may be the other way, as is seen in the following case of encephalitis which was certified pneumonia:—

M. D., a boy aged 9 years, previously in perfect health, was certified pneumonia and admitted to hospital with a history of severe pain in the left side, which began abruptly four days before. He had a spasmodic dry cough, but no spit. On examination the boy looked ill; his respirations were jerky and irregular, being on an average about 30 to the minute. His temperature was swinging between 98° and 100° F., and the pulse-rate varied from 88 to 120. No physical signs were found in the chest. Four days after admission generalised choreiform movements appeared, which were more marked at night. The pain had disappeared by that time, and he was perfectly intelligent. Examination of the spinal fluid proved negative. This restlessness continued for a month and was associated with attacks of lethargy during which the boy could not be properly roused. At the end of two months the choreiform movements had ceased; night restlessness persisted, and he was drowsy in the mornings. He was rapidly becoming thinner. A new movement then began to develop—viz., myoclonic twitchings causing abduction of the arm with internal rotation of the forearm. During his fourth month of illness he presented a typical picture. The flapping movements of the arms synchronised with his respirations, the rhythm of both being about 50 to the minute. He was known in the ward as "the penguin." With head hanging forward and chin resting on sternum he shuffled along panting and flapping. The movements did not cease during sleep. The arm movements and the respirations could be dissociated in rhythm for a short time; thus he could slow his respirations, bringing them down to about 25 per minute, while the movements of the arms maintained a rhythm of 50, but the rhythm of the arms could not be voluntarily altered.

SYMPTOMS COMMONLY MISINTERPRETED.

The onset of encephalitis was sometimes explosive, or a child might be vaguely unwell for days before the disease definitely declared itself. In the first instance the onset of the illness could be determined almost to a minute; in the second any reckoning of the time of onset was uncertain. The following table of the incidence of the commonest symptoms during the first and second days of illness must be read with these facts in mind:—

	Per cent.		Per cent.
Headache	51	Sleeplessness	21
Lethargy	45	Myoclonic and choreiform movements ..	21
Squint and diplopia ..	39	Neuralgic pains	18
Vomiting	33		
Delirium	24		

Headache, vomiting, delirium, and sleeplessness are early symptoms of many diseases. The myoclonic movements in tuberculous meningitis, the choreiform movements in the rheumatic group, and the pain in the side in pneumonia were sufficient in several cases to suggest encephalitis during the epidemic. Lethargy and diplopia are significant symptoms, but in several instances were misinterpreted.

Double Vision.

That half of the children, notified as encephalitis and admitted to hospital, did not suffer from the disease is due partly to the inherent difficulty in the diagnosis and partly to the fact that the epidemic was so well advertised. The public health authority were anxious that every mild or suspicious case should be certified and admitted to hospital for observation; medical practitioners were everywhere on the outlook for the disease, and newspapers published, almost daily, paragraphs informing the public of the fell significance of "drowsiness and seeing double." As the result of this publicity details of medical history previous to admission to hospital were often the result of suggestion. Thus it was not uncommon for a mother to bring up a baby a few months old and relate that it was "sleeping and seeing double"; or for a child to say that it was seeing double after the idea had been suggested by a parent. "Seeing double" was a phrase the significance of which had to be most carefully searched for. At times, especially in the gastro-enteritis and pneumonia groups, it connoted a polyopia due to delirium.

Lethargy.

It is difficult to decide where drowsiness ends and lethargy begins. Children when out of sorts from minor ailments are often drowsy. Children suffering from graver diseases, such as tuberculous meningitis and severe toxæmia, may be in a typically lethargic state. In the absence of other symptoms suggestive of encephalitis these factors were responsible for erroneous diagnosis during the epidemic.

Temperature.

The temperature chart was not found to be of much assistance in diagnosis, except in the case of pneumonia. Eight children with encephalitis were admitted to hospital before the fourth day of illness. During the first week of their residence in hospital two showed no temperature elevation, six had temperature showing irregular movements, four up to a maximum of 101° F. and two up to a maximum of 102°. Severe cases of intestinal toxæmia had irregular temperatures, which attained higher levels, but the milder cases did not exceed 99·5°. The charts in tuberculous meningitis showed great variation. Several did not rise above 100°, even immediately before death.

Ketonuria.

Of assistance in the diagnosis of intestinal toxæmia is the markedly positive Rothera reaction obtained in such cases, but ketonuria is common in childhood and was present in 80 per cent. of the children suffering from encephalitis during their first week in hospital, and in all cases of tuberculous meningitis up till death.

SUMMARY.

(1) In children the diseases most liable to be confused with early encephalitis are: Gastro-enteritis, tuberculous meningitis, and pneumonia.

(2) Examination of the cerebro-spinal fluid will always exclude meningitis, and in certain instances will establish a diagnosis of encephalitis.

(3) In gastro-enteritis the gastro-intestinal symptoms are often overlooked on account of others suggesting a disease of the nervous system, such as headache, delirium, drowsiness, sighing respirations, and pseudo-ptosis.

(4) Pneumonia in its early stages before the development of physical signs in the chest may be mistaken for encephalitis when it is ushered in by convulsions, twitchings, delirium, meningism, drowsiness, vomiting, and pain in the side. On the other hand, pain in the side, a cough, and rapid respirations may be the first symptoms of encephalitis.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

ENDOCRINE THERAPY.

(Continued from p. 740.)

AT the resumed meeting the chair was occupied by Dr. LANGDON BROWN.

Dr. H. CRICHTON-MILLER pointed out the importance of the endocrine gland secretions from the subjective aspect. There was much need of evidence as to their effect for functional sufferers especially. A drug house of high standing, which desired its name to be withheld, had placed at his disposal a series of tablets, for both men and women, for experimental purposes. They were labelled simply with the letters of the alphabet, and some members of the staff at his clinic, and other medical volunteers, would consume them and report results. Dr. Crichton-Miller expressed the hope that Prof. Swale Vincent would join the band of volunteers.

Mr. J. E. R. MCDONAGH spoke of the effects of those glandular extracts with which he had experimented on animals—i.e., adrenalin, thyroxin, insulin, and ageratin (testicular extract). His object in this research was to ascertain the effects of the drugs on the blood and organs and so to arrive at a basis for their chemo-therapeutic employment in man. Many of the extracts were derivatives of the amino acids. Though the amino was the most active group, the action of the compound really depended on the way in which this group was checked. Adrenalin caused the protein particles in the plasma to increase in number, and then to go into solution, and this dual action of conduction and dehydration caused constriction of capillaries and a consequent rise of blood pressure. The action of adrenalin, he said, was not specific. Insulin caused hydration of the protein particles, and adrenalin proved to be an antidote because it caused dispersion of the hydrated particles. When protein particles increased in size they were likely to be precipitated in capillaries, and if in the cerebral ones, fits and convulsions ending in coma ensued; while when this took place in the lungs there was the pulmonary form of shock. Adrenalin was not powerful enough in these conditions, and it should be substituted by glucose injected intravenously, and oxygen injected subcutaneously. Adrenalin was apt to fail as a styptic, because its later action of dehydration caused coagulation to be retarded. Thyroxin caused a slower dehydration of protein particles than did adrenalin, hence it was more valuable in chronic diseases; in the chronic stages of disease the protein particles increased in size and became too independent. In his view, malignancy was simply an expression of protein hydration. When the particles gradually increased in size, thyroxin could break them up. Its action could be enhanced by the simultaneous employment of colloid iodine. Insulin caused hydration of the protein particles, and its action was not specific; its effect could also be produced by certain synthetic organic preparations of sulphur. Insulin was an excellent antidote against any powerful dehydrator. An acute bacterial infection might cause such profound dehydration as to call for insulin, the drug best suited to bring back to the colloidal state those protein particles which were passing into true solution. Insulin could also be employed with advantage in cases of anæmia associated with a great destruction of the red blood corpuscles. With regard to ageratin, he said he did not know anything of the chemistry of the compound, but its clinical behaviour suggested that it might be a phosphatide, related to cephalin. Ageratin protected an animal against infections, interfered with the antigenic action of the organic extract in the Wassermann reaction, and reduced the precipitating effect of a positively reacting serum. When once in the system, this drug should prove useful in protecting man against the invasion of parasitic and chemical reagents.

Dr. M. B. RAY dealt with the early beliefs associated with the influence of various foods and drugs on the health and endurance of the individual, and expressed his belief that the ductless glands exerted a powerful effect on the body metabolism. He pictured various types of case which were held to be significant of deficiency in one or other of these important secretions, laying particular stress on the relation of goitre to rheumatism in young girls of 10 to 15 years of age. He said that in localities where goitre was endemic, the incidence of rheumatic fever, cardiac rheumatism, and rheumatoid arthritis was abnormally high.

Dr. LANGDON BROWN, in the course of his brief reply, said it would be agreed that there was now less difference between the clinical and laboratory points of view than a few years ago. Some laboratory work was beginning to confirm what some had already concluded from their clinical experience, and he asked whether Prof. Swale Vincent still took the agnostic view about the pituitary gland secretion. He regarded Mr. Leslie Pugh's remarks as of great interest; the restoration of the stimulating action of the pituitary body on the milk production of the cow by giving pituitrin showed here, as in the human, the relation between the sympathetic nervous system and the ductless glands.

Prof. SWALE VINCENT, responding to the Chairman's cordial invitation to reply, said the fact that one could extract an active juice from the pituitary gland meant nothing more than that such a juice could be extracted. There was the same lack of exact knowledge concerning the adrenals. He was not favourably impressed by the observations of Mackenzie Wallis on the blood-sugar curves, and he was unfavourably impressed by those of Prof. Dixon. Often the physiological material used was much too delicate, as also were the doses. Much more scepticism was needed by the practising physician on these matters. One never knew what would happen if a certain treatment were not adopted, and until the normal curve and incidence of a disorder was known it was dangerous to assume that a certain remedy given had been efficient, and especially dangerous was it to give a mixture, as was often done, and attribute a result to one particular component of that mixture. There were many pitfalls in therapeutics, and in endocrinology more than in any other department.

SECTION OF LARYNGOLOGY.

PAROXYSMAL RHINORRHŒA.

ON April 3rd the Section devoted itself to a discussion on the subject of paroxysmal rhinorrhœa, instead of the usual examination and consideration of cases.

Dr. JOHN FREEMAN, in introducing the subject, took as the typical condition to illustrate his remarks, hay-fever. This occurred at a certain period of the year in people whose mucous membranes were extremely sensitive to grass pollen, which produced a violent reaction in the nose, with a copious watery discharge. He was not himself sensitive in this way, and he was able to put into his veins 20 times the quantity of grass pollen that would kill a sensitive person, and yet feel no effects from it. 500 units of pollen extract would probably kill a hay-fever subject, but 20,000,000 units had no effect on the rabbit. Therefore the condition could not be a toxic one. Other forms were cat asthma, horse asthma, flour asthma, in all of which the essential was the presence of a protein irritant. Spores of fungi in infinite variety could also produce an analogous state of affairs in those who were sensitive to those substances. The irritants could reach the person either via the mucous membrane or through the blood. A colleague agreed to be rendered sensitive to pollen conveyed through the air, and the speaker tried to render himself sensitive to egg. His colleague's case was quite a success, but his own was a practical failure, as he had employed too much cocaine in the process of preparation. Practically all the sufferers from this form of rhinorrhœa he had questioned—some 500—agreed that their worst troubles were in connexion with the eye; others of less moment being the irritation of the nose, mouth, and skin, with some tickling in the throat. If, in a sensitive person, the pollen were brought to a scratch or abrasion, urticaria and a surrounding flush would be seen, and even a whole limb might swell in consequence. If repeated on a normal person, nothing happened. If the substance were put into a sensitive person's food or drink, diarrhœa and faintness would be experienced. One investigator put pollen up the rectum, and pruritus ani occurred. Angio-neurotic œdema followed putting it into a vein. Other conditions which might occur were giant urticaria, asthma, migrainous headache, epilepsy; also arthritis, colitis, and nephritis in paroxysmal attacks. Thus the effect of the substance which set up the irritation might be very widespread, though the rhinorrhœa was probably the most obvious manifestation. Mostly, heredity was very strongly marked in the subjects of this disorder, with great delicacy of nerve response, but Dr. Freeman did not regard the nervous systems of these people as abnormal. To expect to immunise against all the possible varieties of the condition was impossible; moreover, the subjects were sensitive not to one form of irritant, but to a dozen.

Dr. BROWN KELLY (Glasgow) expressed his preference for the title "vasomotor rhinitis," as paroxysmal rhinorrhœa connoted only one aspect of the disease. The vasomotor disturbance in the nose was manifested by paroxysmal sneezing, profuse hydrorrhœa, and excessive swelling of the inferior turbinates. After the watery discharge ceased the nose usually became blocked by a turgescence of the erectile tissue, and the symptoms usually passed off as suddenly as they arose. It differed from a cold in the head in not being due to infection, not being infectious, and not being followed by a discharge of muco-pus. Sometimes, when the patient came for advice, all that remained of a vasomotor disturbance was swelling of the nasal erectile tissue. In these cases the intranasal appearances were often normal between attacks, but during the examination of the patient the condition of his nervous tension must be noted by the observer. If an old-standing pronounced case were examined during the swelling of the inferior turbinates, it would be seen that the swelling extended to the whole depth, whereas in rhinitis only the lower part might be enlarged. Such nasal diseases as turbinal congestion and hypertrophy, polypus, and septal deviation might be associated with vasomotor instability and might mask its manifestations. Occasionally the aspergillus fungus gained entry into the nose, producing on the posterior part of the middle meatus a tough, greenish mass of mucus largely composed of the mycelia of the aspergillus. Some patients with polypi stated that for years before the polypi formed they suffered from vasomotor symptoms. The recurrence of the polypi was largely influenced by the state of the vasomotor mechanism for the time being. It was very important to treat vasomotor instability when present, otherwise many operations might be performed without benefit. He had seen patients who derived no benefit from resection of the septum and the removal of the greater part of both inferior and middle turbinates improve quickly under constitutional treatment.

Dr. Kelly said a hypersensitiveness of the nasal mucous membrane was the local condition which in most cases predisposed to the sneezing, the rhinorrhœa, and the turbinal swelling. To reduce the nasal hyperæsthesia he had frequently used alcohol injections into the regions traversed by the two principal nerve trunks, and the success of it in many cases justified its continuance. He believed that the alcohol acted as a nerve block. The peculiarly sensitive condition of the mucous membrane he considered to be oftenest due to nerve exhaustion of emotional origin, and favourable conditions were prolonged anxiety or apprehension, and a lowered state of the general health, sometimes the latter being brought about by some form of toxæmia, or by sexual excess or irregularity.

Dr. JAMES ADAM (Hamilton) said his conclusions concerning the disorder were based on an analysis of 830 cases of asthma. Paroxysmal rhinorrhœa connoted two things, catarrh and spasm, and they were common, together or successively, in the whole respiratory tract. They were due, in his view, to toxæmia, largely as a result of dietetic and hygienic errors. The recurrent bronchitis of children ended, unless prevented, in asthma. Of the 850 cases of asthma he had analysed, 12 per cent. began in the first decade, attacks of laryngismus having been a common precedent. Manifest dietetic and hygienic errors were found in 92 per cent. of these cases of the first decade, and in 77 per cent. of cases which had started before the age of 50. Half of the 42 per cent. of cases arising in the first decade gave a history of eczema. Rhinorrhœa, laryngismus, urticaria, epilepsy, goitre, and Raynaud's symptoms were all more or less frequent complications of asthma. He contended that his toxæmia view was supported by the fact that 75 per cent. of the cases were cured by attention to diet and hygiene, chiefly outdoor exercise, and a weekly mercurial and other simple drug treatment, provided any sources of sepsis were attended to. Twenty men who had had asthma during most of their lives lost it while living under army conditions, but it returned on their resuming the softer civilian life. Veterinarians could produce broken wind in any colt by bad feeding. Asthma was sometimes complicated by epilepsy. He had cured, he said, at least half a dozen cases of paroxysmal rhinorrhœa, some of them complicated with asthma or hay-fever, by simply stopping the ingestion of milk. In fully 60 per cent. of his total number of asthmatic patients there was a nasal condition which required rectification. Chloral would stop hay-fever. The latter was not quite the same condition as asthma, for only 7 per cent. of asthmatics had hay-fever, and only 7 per cent. of hay-fever patients had asthma.

Results of Operations.

Miss MARGARET C. TOD, clinical assistant at Edinburgh Royal Infirmary, reported the results of an inquiry she had made as to the results of treatment, including operations, for asthma in patients attending the clinics of Dr. Logan Turner and Mr. J. S. Fraser, as well as private cases of Mr. Fraser. Cases of asthma had been examined totalling 507, and 315 operations had been performed on them. Seven patients reported that they were worse after the operation. In 173 cases of all ages, 19 were cured, 76 improved, 78 were no better. The prognosis was distinctly better in young people than in older patients. Miss Tod also showed a table giving the results of various operations that had been performed: 38 out of 60 patients were no better after cauterisation, 19 were improved, 18 out of 51 were no better for submucous resection of the septum, while 15 out of 45 were no better after tonsils and adenoids had been removed. When operating for the relief of symptoms of asthma the patients should be told that a cure could not be promised. When the air-way was blocked, or there was an obvious focus of infection, operation often relieved the symptoms, and in young people it might result in a cure.

Dr. M. CULPIN said the kind of conditions under discussion were parallel to phobias.

Sir JAMES DUNDAS-GRANT spoke of the beneficial effect of adrenalin in these cases. Most asthmatic patients had a small swelling of the middle turbinate body, which was extremely sensitive. Sometimes a small mobile polypus caused more irritation than a nose full of polypi. Dixon and Brodie showed that the upper and posterior part of the septum was the most sensitive in the production of reflex spasm. Some patients with vasomotor rhinitis showed a tendency to urticaria and to bruise readily; they also suffered from cold feet, chilblains, &c., conditions indicating a deficiency of calcium in the blood. Hence the importance of giving these patients calcium and magnesia.

Dr. COCKE said he had seen considerable benefit result from cauterisation of the septum and turbinals, but in children the most important treatment was the removal of septic tonsils. Possibly too much attention was being concentrated on the nose in this disease, while the whole system was largely ignored. Colloidal changes in the blood seemed to be of more importance than the local condition of the nose.

Mr. H. **BANKS-DAVIS** said he usually found the blood pressure of these patients was abnormal, either too high or too low.

Mr. C. A. **PARKER** spoke of cases in which people had been extremely sensitive to the irritation of mahogany dust. Some chair-makers in High Wycombe showed this, and they had profuse rhinorrhœa. In this case the cause seemed to be a mechanical irritation and not a question of protein.

Dr. A. **WYLIE** said he considered that in the majority of the cases the condition was due to auto-intoxication, and attention to the general health would probably cure the patient. He believed in 1/10 gr. calomel every day in these cases.

Mr. W. **STUART-LOW** spoke of the value of cocaine in these cases, 10 per cent. used freely. He had never seen poisonous effects from it. He had found in these patients a sensitive œdematous spot high in the ethmoid region. It bled readily and was often a site of purulent material.

Mr. J. S. **FRASER** said his feeling was that this condition was one for team-work in the profession. What was specially required was that a dozen cases should be thoroughly investigated from every point of view, on the same lines as they were worked at in the Rockefeller Institute in America.

The openers briefly replied, Dr. **KELLY** pointing out that many of his cases had had the kind of team investigation which Mr. **FRASER** recommended.

LIVERPOOL MEDICAL INSTITUTION.

AT a pathological meeting on March 19th at the Institution Mr. H. C. W. **NUTTALL** read a paper on

Melanomata.

After discussing the normal distribution of melanin pigment and its relation to the pathological process, a brief description of the clinical characters and course followed. The dangerous nature of an irritated mole was emphasised and the extreme rapidity of recurrence after incomplete excision was pointed out. The histological appearances of melanomata and the difficulty of deciding the serious question as to whether they were benign or malignant was next touched upon. An analysis of 35 cases illustrated many of the points discussed. Without going into the details of the controversy, Mr. Nuttall reviewed the question of the origin of melanomata from either epidermal or mesoblastic cells, and showed that recent work was strongly in favour of an epidermal origin. A brief survey of the phylogeny and functions of the melanin pigment cell inclined to the view that, in white races at any rate, it was probably a vestigial structure and therefore more liable to atypical growth.

Dr. **RONY JONES** and Prof. **ERNEST GLYNN** communicated a short paper on

Blood Groups.

They had searched for abnormal blood groups among 40 medical students, mainly by cross-agglutination tests but also by absorption tests. In the former the sera and corpuscles of each student were tested against those of the remainder, making 1600 tests in all. Each test was done in five dilutions by a macroscopic method. Many difficulties had to be surmounted in keeping the sera and corpuscles sufficiently long for the tests. Numerous controls were carried out. The cross-agglutination test showed 7 per cent. Group I., 30 per cent. Group II., 17 per cent. Group III., and 46 per cent. Group IV. Abnormal agglutinations occurred in moderately high titre with four sera, three being Group IV. and four sets of corpuscles, and three being Group IV. The blood from one Group IV. student behaved abnormally both in its sera and corpuscles. Another abnormal Group IV. serum was discovered by absorption test. The relatively large percentage of Group IV. students—i.e., universal donors—whose corpuscles agglutinated slightly was striking and of considerable importance in blood transfusion.

At the last ordinary meeting of the Institution the members of the Manchester Medical Society were guests and contributed the programme.

Mr. J. B. **MACALPINE** read a paper, with lantern illustrations, on the treatment of

Vesical Papilloma

by cystoscopic methods, combined with diathermy. He outlined his own technique, laying emphasis on the desirability of general anæsthesia in order to increase the length, and so diminish the number of treatments. In America and on the Continent, where local anæsthetics were in use, treatments were often over a dozen in number, whilst in the speaker's practice it was very rare for more than four sittings to be required. Further, the burning of the base of the growth was painful, and therefore might be shirked when local anæsthesia was employed. The per-urethral approach was, he thought, universally accepted as the method of choice in all cases where the growth was small, or where little recurrences were noticed early. With extended experience it was possible to employ it on papillomata of greater size. Even when a large growth filled a considerable portion of the bladder and rendered the examination and treatment difficult, it was usually possible for the experienced cystoscopist to select a spot where the current could be applied with perfect safety, and even though the visibility became poor as the result of cloudiness of the medium, much progress could be made, with the result that in three weeks' time, when the bladder was reinspected, the growth would have shrunk and treatment could be continued under direct vision. Such probationary treatment had proved eminently satisfactory in the speaker's experience. The results were excellent if the cases were systematically followed up for a period of two or more years. To obtain this end the patients had to be communicated with before their treatments fell due, and when many patients were simultaneously under treatment this involved a properly organised "follow-up." Such a system was illustrated in the lecture. Re-examination cystoscopies should be made at first over a period of three months, and later at six-monthly intervals. This, together with the obtaining of the cases at the first onset of hæmaturia, was the secret of good results. Recurrences when recent were easily and successfully treated. It was an interesting fact that return growths rarely took place on the site of the primary at a period later than three months from the last treatment.

Prof. A. **RAMSBOTTOM** then read a paper on Dizzy Attacks.

BRIGHTON AND SUSSEX MEDICO-CHIRURGICAL SOCIETY.

A MEETING of this Society was held on April 2nd, Dr. E. F. **MAYNARD**, the President, in the chair.

Mr. F. E. **FEILDEN** read a paper on

Cystoscopy.

He said that cystoscopy was one of the most important methods of exploration in urological surgery. In cases of vesical calculus cystoscopy gave a correct diagnosis and indicated the correct method to adopt for the removal of the calculus. As to whether an anæsthetic was required or not depended upon the circumstances of the case; usually no anæsthetic was required. *Bacillus tuberculosis* or *B. coli* might be found in the urine without any lesion of the kidney being present. Residual urine, a trabeculated bladder, and no evidence of urethral obstruction usually indicated some lesion of the cord. The experiments of S. C. Dyke and B. C. Maybury seemed clearly to indicate the caution that was necessary in pyelography and irrigation of the kidney pelvis. Cystitis due to the gonococcus, he held, was not common. In estimating the functional activity of the kidneys the most reliable test, in the speaker's opinion, was the urea-concentration test, but also the blood cholesterol content would appear to be of value. Too often cases of frequency were treated on expectant lines, when early cystoscopy might prevent irreparable damage to the bladder wall. Meatoscopy in certain cases was useful in diagnosis, but this was not so in the majority of cases. Growth, stone, and tubercle were more common on the right side; this might be due to the fact that there were more structures crossing the right than the left ureter. To X ray a patient with a ureteric bougie in situ was a valuable means of differentiating between a calculus in the ureter and a calcareous gland adjacent to the ureter. Not infrequently the failure of a nephropexy was due to the kidney not being fixed at a sufficiently high level. A double ureter should suggest other abnormalities in the urinary tract. In catheterising healthy ureters when the bladder was known to be infected there was little likelihood of conveying the infection to the ureters. Nephrectomy in cases of hæmaturia of unknown origin was only justifiable when the bleeding was unilateral, or when by its frequency or amount it endangered the patient's life or seriously interfered with his occupation. In selected cases diathermy through the cystoscope was a most successful procedure, obviating the prolonged convalescence that was often associated with an open operation. In the course of his remarks he said that the best cystoscope now on the market was one of German or American manufacture. It was advisable to get accustomed to an instrument of known magnification and endeavour to distend the bladder with a uniform quantity of fluid.

Dr. GEORGE MORGAN quoted a case of varicose veins of the prostate with severe attacks of hæmaturia every three months lasting two to three days which cleared up with capsules containing turpentine (2 minims) taken every four hours. He also quoted a case which was diagnosed as a small stone in the ureter by X ray but which, on cystoscopy, was shown to be an old calcareous gland.

Dr. H. M. GALT considered that there was no difficulty in eliminating *B. smegma* with modern bacteriological staining methods when examining urine for tubercle bacillus.

Mr. M. FITZMAURICE-KELLY considered that cystoscopy should be done under a local anæsthetic in males. In females an anæsthetic was not required. In cases of severe cystitis he considered that spinal anæsthesia should be employed also. In advanced tuberculous kidney, when it was important to know the function of the other kidney, spinal anæsthesia was very valuable when using indigo-carmine test for renal efficiency. In renal lavage it was quite safe to use a pressure of 15 inches—i.e., below secretory pressure. Where there was difficulty in diagnosis between stone and tumour, a ureteric catheter could be used as a probe. Bleeding from one kidney might be caused by malignant disease, and it was very important to diagnose the condition and operate at once. For this pyelography should be employed to show the filling defect of pelvis.

Exhibition of Case.

Mr. FITZMAURICE-KELLY showed a case of Epithelioma of the Bladder. The patient, a woman aged 51, had no symptoms till Sept. 26th, 1923, when a sudden large hæmorrhage from the bladder occurred. This was followed by retention due to clots, necessitating catheterisation. Cystoscopy on Sept. 27th showed a papillomatous growth on the anterior wall of the bladder. At operation on Sept. 29th a hard, flat ulcer was found just above the papilloma, and the whole thickness of the bladder wall bearing the growths and an area about three-quarters of an inch around was resected, and the bladder closed with drainage. Two applications of radium, 140 mg. per 12 hours, were made on Oct. 6th and 7th through the suprapubic opening. Now, 18 months after the operation, the patient remained well and free from symptoms. In connexion with this case Dr. Galt showed some excellent microscopical slides.

Reviews and Notices of Books.

DIGITALIS.

The Action and Uses in Medicine of Digitalis and its Allies. By A. R. CUSHNY, M.A., M.D., LL.D., F.R.S., Professor of Pharmacology in the University of Edinburgh. London: Longmans, Green and Co. 1925. Pp. 303. 18s.

THIS volume is written in Prof. Cushny's usual lucid and comprehensive style and will be a welcome addition to medical literature. The author's wide clinical experience and 30 years of continuous interest in the subject of digitalis enable him to view the recent advances in true perspective. The chapter on the changes seen in the course of the therapeutic application of digitalis is admirable. Beginning with a critical historical introduction, the book deals with the known facts of the chemistry of digitalis and considers at length the information which laboratory experiment has collected from a study of its effects on the heart of the frog and the mammal. The action on the blood pressure and on the central nervous system is described and a chapter is devoted to the important matter of the absorption, cumulation, and elimination of digitalis bodies.

There are many fields in which pharmacology has, in the last 25 years, been able to modify or illuminate the clinical path, but it seems that in this particular subject the cardiographer investigating patients has made greater progress than the laboratory worker. The book reveals a story of failure to isolate the active principle from digitalis or do more in analysis of its action than observe the effect of toxic doses on the heart in vitro. The removal of œdema fluid, perhaps the most striking clinical effect of digitalis, has not as yet received satisfactory experimental investigation. A final chapter deals with the administration and biological assay of digitalis. The introduction of biological tests for therapeutic agents whose activity could not be determined chemically was due to Houghton in America, who proposed one for digitalis. The value of these tests in the case of other preparations, such as pituitary extract, insulin, and neosalvarsan, is fairly well supported by clinical evidence. In the case of digitalis only there is no evidence to support the biological test—that is to say, the clinician does not encounter samples which are either uselessly weak or dangerously strong, and he is unable to distinguish between preparations which the laboratory test declares to be widely different in potency.

The discussion on dosage should prove useful, for too little is known in this country of the treatment devised by C. Eggleston in America, whereby excellent effects are obtained in many cases through the administration of large doses, such as 2½ drachms, over a short period of time. A valuable bibliography concludes the book.

OPERATIVE SURGERY.

By W. S. BICKHAM, M.D., F.A.C.S., former Surgeon in Charge of General Surgery, Manhattan State Hospital and Instructor in Operative Surgery, College of Physicians and Surgeons (Columbia University). Vols. V. and VI. London and Philadelphia: W. B. Saunders Company. 1925. Pp. 880 and 980. 50s. per volume.

THESE two volumes complete this large system of operative surgery. The general plan and scope of the work have been referred to in our reviews of the first four volumes. Volumes V. and VI. maintain the high standard which characterises the earlier parts. We congratulate the author on having been able to carry through to completion such a great task without showing any obvious sign of fatigue or staleness. The subjects treated in Volume V. are operations upon the colo-recto-anal tract and the genito-urinary system in the male; in Volume VI. those upon the female genital organs and the new-born are considered, and indeed this volume forms a complete treatise on operative gynæcology. A final chapter is devoted to some operations which are not described elsewhere. The same encyclopædic outlook is evident in these volumes as in the rest of the work. Thus there are described five methods of valvotomy of the valves of Houston for fæcal obstruction.

The various operations for hæmorrhoids occupy 12 pages, whilst for complete rectal prolapse 11 different methods are given. This last example illustrates very well what some might regard as the greatest defect of the book. Every practising surgeon knows how difficult it is to cure some of these patients with prolapsus ani permanently. Therefore he seeks guidance as to the results likely to be got from the different procedures. The author gives him but little help in choosing the most beneficial method for any particular case. Once having selected an operation, however, the reader can be sure of finding it well and clearly described. We notice that certain cystoscopic techniques concerned with bladder growths and ureteric calculi are not included amongst the other operations upon these organs. A separate index volume is issued, and seems to be very complete. "Bickham's Operative Surgery" covers the whole field of operative surgery fully and systematically and is likely to take its place as a standard work of reference on operative technique.

GYNÆCOLOGY AND MIDWIFERY.

1. *A Practice of Gynæcology.* Fifth edition. By HENRY JELLETT, M.D. Dub., F.R.C.P.I., Consulting Obstetrician to the Department of Public Health, New Zealand; Ex-Master, Rotunda Hospital, Dublin. London: J. and A. Churchill. 1925. With 117 illustrations and 12 coloured plates. Pp. 711. 25*s*.

2. *A Short Practice of Midwifery.* Ninth edition, revised. Same author and publishers. 1924. Pp. 591. 18*s*.

3. *A Short Practice of Gynæcology.* For Medical Students. Fifth edition. Same author and publishers. 1924. Pp. 138. 18*s*.

1. A FOURTH edition of the Practice of Gynæcology appeared in 1916, and the present edition shows that careful and extensive revision have been since carried out by the author. A number of fresh sections have been added, amongst which those on gas inflation of the peritoneal cavity and of the Fallopian tubes, ovarian transplantation, and the Manchester treatment of uterine prolapse and implantation adenomata of endometrial origin deserve special mention. The chapter on menstruation and its disorders has been largely rewritten and brought into conformity with modern views on these subjects, and a similar course has been adopted in regard to that in endometritis and metritis. New chapters have been added on sterility and on the general principles which govern gynæcological operations. The cauterisation of the endometrium by means of superheated steam has been almost universally abandoned and replaced by surgical methods or by radiotherapy. The author wisely dismisses with a few words the subject of atmocausis and zestocausis, to which some attention was given in the fourth edition. The revision of the book and the choice of new matter have been careful, and the whole forms a complete and good text-book which should be appreciated by students.

2. The appearance of a ninth edition of the same author's "Short Practice of Midwifery" is an indication of its value. For each condition a definite line of treatment, which has been found successful in the very large experience of the Dublin School, is given. In a few instances the views expressed do not correspond with those of the majority of writers of other schools. For example, the statements that the beginning of labour is the best time to perform version in breech presentation, and that "prophylactic pubiotomy" is the method of choice in the treatment of moderate degrees of pelvic contraction, are not in accord with the teaching of other schools; again, most English and American obstetricians advise against the use of Schultze's method of artificial respiration in white asphyxia of the new-born. No mention is made of intracranial birth injuries or the causes of stillbirth generally, nor is the occasional value of X rays in obstetrical diagnosis noted. Antenatal examination and post-maturity are two subjects which perhaps are worthy of more emphasis than they receive. But the book as a whole can be thoroughly recommended, and should be especially valuable to the junior practitioner.

3. A fifth edition of the smaller manual, "A Short Practice of Gynæcology for Medical Students," has also been prepared by Dr. Jellett, its title indicating that it forms an introduction to the science. In this edition several minor alterations have been made and the chapter on endometritis has been entirely rewritten. The book still retains its strictly anatomical arrangement. We are not satisfied that this is advantageous in a manual for students, since the far-reaching consequences of an infection, for example, with the gonococcus, are not effectively presented. Displacements of the uterus are fully considered, the description of the mode of production of prolapse following the older school. In the list of causes of retroversion of the uterus it is not made sufficiently clear that these conditions do not necessarily cause retroversion. No mention is made of the congenital variety. Most modern authorities would not agree that retroversion need be treated except in the minority of cases. Throughout the book the sections on treatment are good. Conservatism in operative work is strongly advocated. The volume is well illustrated, particularly the chapters on operations.

THE PARKINSONIAN SYNDROME.

Les États Parkinsoniens et le syndrome Bradykinétique. Par MM. HENRI VERGER et RÉNÉ CRUCHET. Avec la collaboration de MM. D. ANGLADE et A. HESNARD. Paris: J. B. Baillière et Fils. 1925. Pp. 206.

THIS little work contains the substance of six lectures delivered in the Medical School of the University of Bordeaux, and expresses the views of the authors concerning the clinical symptomatology and pathology of the Parkinsonian syndrome which may ensue after an acute attack of epidemic encephalitis. It may be regarded as an expansion of Prof. Cruchet's recent lecture at the Royal Society of Medicine on the same theme. The lectures are vividly written; the authors' use of the historic present in describing illustrative cases reproduces the atmosphere of the clinic, and the arguments in favour of their contention that the syndrome is a thing apart from chronic paralysis agitans are lucidly expressed. In this matter many will agree that the views of Netter and Souques as to the possibly similar ætiology of the two disorders cannot yet be abandoned, despite the skilful pleadings of the Bordeaux school. The important physiological work of Sherrington and of I. Hunter has thrown much light on the pathogenesis of the Parkinsonian syndrome. The book is well illustrated by photographs and microphotographs.

PHYSICS.

Spectroscopy. By E. C. C. BALY, O.B.E., M.Sc., F.R.S., Grant Professor of Inorganic Chemistry in the University of Liverpool; Fellow of University College, London. London: Longmans, Green and Co. 1924. Pp. 298. 11*s*.

THE third edition of this book is to appear in two volumes; the first of these contains an historical introduction of 10 pages, and is devoted largely to technique. Therein can be found information upon practically any aspect of technique involving the spectroscope, the spectrometer, and the different forms of diffraction grating, though the crystal gratings appropriate for very short wave-lengths do not come within the author's range. Perhaps the information derived from those atomic gratings will receive some consideration in Vol. II. The author has had much experience of practical work on his subject and is able on this account to indicate the many pitfalls which await the investigator in the study of the various types of spectra. With this mass of information before us as to the methods which have been proved appropriate to the different regions of the spectrum we await with interest the author's concluding volume describing the important results which have been obtained by their use.

New Theories of Matter and the Atom. By ALFRED BERTHOUD, Professor of Physical Chemistry at the University of Neuchâtel. Translated from the French by EDEN and CEDAR PAUL. London: George Allen and Unwin, Ltd.; New York: The Macmillan Company. 1921. Pp. 250. 10s. 6d.

Prof. Berthoud reminds us that 25 years ago practically nothing was known about the structure of atoms; now studies of atomic structure are being carried out in many physical laboratories. This book gives a detailed account of the advances in knowledge which have made this possible, especially in their general relation to the problem of the constitution of matter. The treatment of the subject is on an ample scale and mathematical analysis is supplied when occasion requires. An extremely interesting account of isotopes and the bearing of atomic structure on chemical affinity is included. The translators have done their part well. This account of modern discoveries in physics and chemistry deserves to be widely read.

The Vacuum. By J. A. COCHRANE, B.Sc. London: G. Bell and Sons, Ltd. 1921. Pp. 103. 1s. 6d.

IN this book the author follows on the same lines as those which make his "Readable School Physics" so attractive. After a brief account of early ideas on the subject of the vacuum, Mr. Cochrane gives an interesting description of the work of Torricelli, von Guericke, and Pascal. He then discusses the many ingenious devices for the attainment and measurement of various degrees of gaseous rarefication. In describing the limits of use of the ordinary water-jet aspirator, the author says: "The water, however, does not carry all the air in the outer vessel with it, and therefore it is not possible to obtain a very high vacuum with this instrument." This explanation is hardly satisfactory, but such blemishes are few in a very attractive little book.

THE SUCCESSFUL PHYSICIAN.

By VERLIN C. THOMAS, M.D., Visiting Physician to Franklin Hospital, San Francisco. London and Philadelphia: W. B. Saunders Company. Pp. 303. 18s.

THIS book has been written for the young practitioner to fill the gap between theory and practice. It is acknowledged that whatever other experience awaits the young doctor he will find a sharp contrast between his college and hospital life and the life that confronts him outside. Dr. Thomas has spared no pains in his efforts to point the way towards success, nor has he failed to warn the unwary of many pitfalls. The manner in which much sound observation and useful commentary is presented may be somewhat distasteful to the English reader. For example, such chapter headings as How to Attract and Hold Patients, and Changing Ability into Income are jarring, because they seem to put emphasis on the commercial side of a calling that cannot be carried on as a trade. But to every practising doctor business considerations must be of importance, and Dr. Thomas has set up certain guide posts which are likely to be of real value to the newly qualified. He regards a sound scientific equipment as an indispensable foundation. An important consideration is the choice of a locality favourable for the development of the type of practice which the young practitioner aims at establishing. Personal qualities essential to success are integrity, a sympathetic knowledge of human nature, and the power to inspire the particular patient with that confidence which plays so large a part in the science of healing. Among other useful homely precepts we find, "Remember what you say to your patients and see that your later statements agree with your first. You will have many to remember and he has only his own case to keep track of—and will remember all you tell him." This is a strong argument for keeping careful notes. Again, "Telephone your convalescents and inquire of their progress. If they are going on a long journey, ask them to write you of their condition." A simple direction like this is prompted by a sound view of human psychology, while many a patient would be saved future trouble, and incidentally expense, by thus keeping in touch with his medical adviser.

SURGICAL DIAGNOSIS.

Allgemeine und spezielle chirurgische Diagnostik. Ein Lehrbuch fur Studierende und Ärzte. Von Prof. Dr. MAX KAPPIS. Berlin: Urban and Schwarzenberg. 1921. Pp. 625. G.M.15.

IN this book Prof. Kappis offers to surgeons the results of many years of observation both by himself and by his colleagues. The cases he records have been studied with the thoroughness and the infinite attention to detail which appear to be the peculiar quality of the German mind. The result is a vast collection of original observations, admirably systematised and arranged, so that the experiences and the records of the Hanover Clinic on almost any conceivable detail of surgical diagnosis are instantly available. The illustrations would render the volume a valuable possession to a surgeon even if he were ignorant of the German language, but the concise descriptions of different conditions and their differential diagnosis should not be missed. The book is a record of vast experience, and any surgeon will turn its pages with delight.

GENERAL SYSTEMATIC BACTERIOLOGY.

Monographs on Systematic Bacteriology. By R. E. BUCHANAN, Ph.D., Professor of Bacteriology, Iowa State College, U.S.A. Baltimore: Williams and Wilkins Company. 1925. Pp. 597. 30s.

THIS is the first of a promised series of monographs, in the general field of systematic bacteriology, which should ultimately constitute a valuable reference library. This volume—a large one—represents an immense amount of labour and research into literature in an extremely specialised field, but a considerable number of further volumes may be expected if the whole subject is to be adequately covered. Dr. Buchanan gives us an exhaustive review of nomenclature divided into three parts, of which the first, consisting of 108 pages, deals with the history of attempts at systematisation from 1773–1923; and the second, containing 42 pages, is devoted to a discussion of codes of nomenclature and the formulated rules of various botanical, zoological, and bacteriological societies. The third, and major part of the book, consists practically of a dictionary of generic names that have been at various times put forward in bacteriological nomenclature, tracing them from their origin, through the various vicissitudes of their existence, up to their current use. Any worker in doubt as to what is really meant by such terms as myco-bacterium, leuconostic, nocardia, and other such loosely-used and ill-understood words, will find a complete history of each term, with references to its use and abuse by different writers of all nationalities. The work throws many curious lights upon the science of bacteriology, and while it reveals the awful confusion of bacterial nomenclature, it also shows the prolixity of the lesser men and the extent of their obsession by the importance of names. The great masters of the science have contributed little or nothing to the confusion which Dr. Buchanan catalogues: Pasteur appears in but two connexions, and Koch not at all.

The volume is a valuable contribution to the literature of its subject, and will be of the highest use as a work of reference to any systematic bacteriologist.

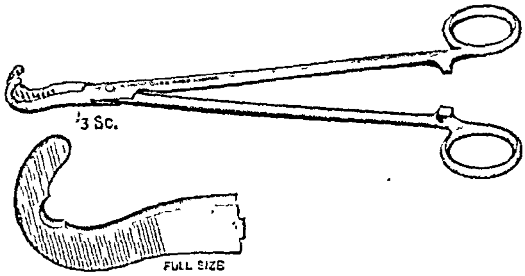
JOURNALS.

British Journal of Children's Diseases. Vol. XXII. January-March.—Dr. F. G. Chandler and Mr. T. W. Preston contribute a paper on pulmonary tuberculosis in childhood based on the study of nearly 300 cases which had been seen at the City of London Hospital for Diseases of the Heart and Lungs during the last 12 years. Although the diagnosis of pulmonary tuberculosis was definitely proved in only 89 by finding tubercle bacilli in the sputum or by post-mortem examination, it is probable that the remainder were early cases of pulmonary or possibly hilum tuberculosis. The ages of the 89 patients whose histories are given in tabular form ranged from 3 to 14 years. In all the cases the lungs, or perhaps the mediastinal glands, were primarily affected. No examples of miliary tuberculosis were included with the exception of three children, who were admitted with obvious pulmonary tuberculosis and died of a terminal miliary affection. Sixty-one, or 68·5 per cent., were females and 28 were males; 39 were 12 years and under, and 22 were 10 years and under. As the result of treatment, 35 were improved, 19 were discharged with the condition unchanged, 27 died, and two were still in hospital. The writers' conclusions are as follows: Pulmonary tuberculosis does occur in childhood and infancy and is not extremely rare. It may run a long, chronic course and is not necessarily fatal. The stronghold of the disease is at the bifurcation of the trachea and bronchial glands, and the lungs are probably infected from this source. Before a diagnosis of intrathoracic tuberculosis is made, every care should be taken to exclude other chronic infections, but when this has been done there should not be too great a reluctance to diagnose tuberculosis, especially when symptoms such as cough, febrile attacks, and poor nutrition are predominant features.—Dr. F. J. Poynton and Dr. L. B. Cole report a case of cœliac disease with glycosuria in a boy, aged 7 years, which was of interest in that there were associated in the same child two profound disorders—an inability to absorb fat seen typically in cœliac disease and an inability to utilise carbohydrates seen typically in diabetes mellitus.—Dr. Donald Paterson and Dr. W. G. Wyllie describe a case of hypertrophy of the bones of a limb due to a nævus. The patient was a boy, aged 7, in whom a nævoid condition of the vessels round the right knee-joint was associated with inequality in length of the lower extremities, the right leg being one inch longer than the left.—Dr. E. W. Goodall records a case of orchitis and abdominal pain occurring as a complication of serum sickness. The patient was a boy, aged 10 years, who had received 33,000 units of diphtheria antitoxin in three doses for a severe attack of faucial and nasal diphtheria. Fourteen days after the last injection and one day after the appearance of serum arthritis and pyrexia he complained of pain in both testes, which were slightly swollen and tender. The scrotum appeared to be inflamed. He also complained of pain in the left side of the abdomen. The pain in the abdomen and testes gradually disappeared after lasting for another 12 days, during which an erythematous rash on the trunk and limbs and irregular pyrexia were present. Similar cases of orchitis and abdominal pain during serum sickness have been reported by French observers, but are very rare.—Mr. C. P. R. Gibson reports a case of intraperitoneal abscess of unknown origin, probably pneumococcal, in a girl, aged 6½, with the post-mortem findings.—Mr. Macleod Yearsley writes on otology in 1924.—The abstracts from current literature are devoted to otorhinolaryngology and treatment.

New Inventions.

FORCEPS FOR THE LIGATION OF BLEEDING POINTS IN DIFFICULT POSITIONS.

A half-ring artery forceps is here illustrated which facilitates the placing of ligatures on bleeding points in those situations where a pair of straight forceps have grasped the vessel and subsequent ligaturing is difficult, such as the tonsil-bed following enucleation. They are in two lengths, 6 or 8 inches, as may be required. The half-ring end has a notch on each blade which is run down to the point of the straight forceps already placed, and the forceps closed on the tissue beyond the immediate grip of the straight forceps. The straight forceps are now removed, the half-ring enables easy placing of a ligature without any danger of the vessel escaping from it when the forceps are removed.



Messrs. Down Bros., St Thomas's-street, London, S.E., have made the instrument for me.

Chas. Johnston Smith, F.R.C.S. Edin.,
Senior Government Surgeon, Singapore.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED MARCH 28th, 1925.

Notifications.—The following cases of infectious disease were notified during the week, namely:—Small-pox, 131; scarlet fever, 1708; diphtheria, 970; enteric fever, 30; pneumonia, 1118; puerperal fever, 53; cerebro-spinal fever, 7; acute poliomyelitis, 8; encephalitis lethargica, 82; continued fever, 1; dysentery, 1; ophthalmia neonatorum, 111. There were no cases of cholera, plague, or typhus fever notified during the week. The number of small-pox cases showed an increase of one from the number for the preceding week.

Deaths.—In the aggregate of great towns, including London, there was 1 death from enteric fever, 130 from measles, 10 from scarlet fever, 110 from whooping-cough, 28 from diphtheria, and 281 from influenza, as compared with 301, 283, 301, and 316 in the four preceding weeks. In London itself the deaths from influenza numbered 26, from whooping-cough 37, and from diphtheria 7.

Royal Sanitary Institute.—A sessional meeting will be held on Friday, April 17th, at 8 p.m., at the Town Hall, and Saturday, the 18th, at 10.15 a.m., at the Medical Baths, Torquay, when discussions will take place on the Necessity for a New Public Health Act; the Town Planning and Housing Scheme at Torquay; Maternal Mortality; and the Spa Treatments at the Medical Baths, Torquay. The chair will be taken by Mr. H. D. Searles-Wood, F.R.I.B.A. (Treasurer of the Institute). Those proposing to attend should notify the Hon. Local Secretary, Major H. A. Garrett, Borough Engineer, Torquay, not later than April 11th.

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These Antigens are prepared from the pollen of grasses and flowers which are known to be active agents in producing attacks of Hay Fever and Asthma. Diagnostic Tests carried out early enable the physician to administer a prophylactic course which, in many cases, will protect the patient against seasonal attack.

Clinical Report.

3/5/23.

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See also p. 33

THE LANCET.

LONDON: SATURDAY, APRIL 11, 1925.

THE PERSISTENT VOMITING OF INFANTS.

THE causes of persistent vomiting in infants are so many and so varied, ranging from "nerves" to serious anatomical defect, that the practitioner who has to deal with a case—and there is no practitioner who is safe from the menace—needs to have all his wits about him. Not only has the child to be considered, perhaps even life being in danger, but treatment has also to be directed towards the mother, whose attitude is rarely that best adapted to the situation. Indeed, there are many cases of persistent vomiting where the mother alone requires attention, the child being quite well able to recover normal habits if released from constant maleficent stimulus. But behind the mother there may loom the grandmother or mother-in-law, each feeling that her status endows her with intuition, and in many cases there will be added the voice of the child's domestic nurse believing firmly in some *régime*. This is not an imaginary picture; in just such a chorus the practitioner may have to decide, both quickly and accurately, the cause underlying the condition, if he is not to treat the case of organic stenosis by the methods which would be suitable for a case of rumination, or confuse a gastritis with a case of nervous vomiting.

Dr. H. C. CAMERON dealt with these various conditions in the last Lumleian lectures delivered at the Royal College of Physicians of London. In recent years much has been made of the condition of idiosyncrasy to cow's milk, certain physicians abroad claiming that mild forms of this condition are the basis of all sorts of infantile dyspepsia. This explanation has not, however, been substantiated, and in Dr. CAMERON's opinion the true condition is very rare and is easily recognised by the sudden pallor, drowsiness, pyrexia, vomiting, and diarrhœa following the ingestion of the smallest quantity of the foreign protein. Another uncommon condition, but one that must not be forgotten in differential diagnosis, is that of infantile rumination, which differs from the same condition in adults in that it is confined to the milk period and is the culmination of a series of voluntary movements; while here a definite nervous irritation is produced if these movements are thwarted, and an undoubted state of beatitude is induced by the successful conclusion of the manœuvre. Dr. CAMERON classed rumination with thumb-, tongue-, and lip-sucking and head- and thigh-rubbing as stereotyped movements which are liable to become fixed by repetition until they are habitual. Some transitory irritation may have initiated them in the first place, but as an established habit they are associated with a lowly form of gratification which, in due course, gives place to older methods of obtaining satisfaction unless the habit is fixed by expostulations, agitation on the part of the parents, or the use of mechanical restraints, for these serve to awaken ungratified longing and to focus the attention on the infantile delight. Various treatments have been advocated, including distraction of the attention, plugging of the nostrils, and forcible closure of the mouth. All are successful in some cases; in Dr. CAMERON's experience that most generally efficacious is the thickening of the food to the consistency of a thick gruel by the use of some such substance as farina. Thickened food is also useful, in his opinion, in some cases of habitual, severe, and long-standing nervous vomiting. A small amount of thick food given before the normal feed stimulates peristaltic contractions and prevents the rejection of the meal. Chloral hydrate given before the feed may be of value, the child being then made to suck while in a somnolent condition.

Dr. CAMERON gave a vivid description of that "nervous infant" which is the bane of the infant welfare centre as well as of the private physician—the babe whose sleep is scanty, who is awake at the slightest stimulus, resuming a constant wailing cry, with clenched hands, hypertonic muscles, a stomach in a state of hyperæsthesia so that food of any kind leads to pain, and a sensitivity of taste which detects the slightest change in diet constituents. These babies grow up into the "nervous child," with enuresis, stammering, habit spasms, anorexia, and eczematous conditions. The dieting of this infant is a matter of great difficulty; it is useless to attempt diluted foods such as would be suitable for true dyspepsias. Often there is no malnutrition associated with this form of vomiting unless some well-meaning pædiatrist has introduced a modified or diminished diet. There does, however, seem to be a special intolerance of fats, and the reduction of fat in the milk is at times attended by successful results. The stimulation of hunger must be avoided, but the predominant factor is the environmental. Symptoms often cease like magic in hospital or in the hands of a competent and self-confident nurse. A tight shawl or a prolonged bath may rest the over-stimulated nervous system; the value of the infantile strait-waistcoat, "swaddling clothes," has long been recognised by simple peoples. Even in small infants a condition of "negativism" may be met, whereby the infant's first waking thought is to resist anything which may be done for it. The condition may persist as an inveterate neurosis for years, and the more attention there is paid to it the more inveterate it becomes. The lectures provided a valuable survey of the conditions which must be borne in mind when investigating a case of vomiting in the infant.

THE MEDICAL WITNESS.

THERE are probably few who practise medicine or surgery who have not at some time found themselves in the witness-box in a court of law. Cross-examination has fewer terrors for them than for the average witness. They are usually present in court to speak of something of which they have made prolonged study and have special knowledge. They meet the cross-examiner on more than equal terms, and need the protection of the presiding judge less than does the non-professional witness. But some recent remarks of the Lord Chief Justice upon certain objectionable forms of cross-examination are of interest even to the expert witness. Counsel, said Lord HEWART lately in the Court of Criminal Appeal, are growing too fond of the type of question which begins, "Is your evidence to be taken as suggesting that . . . ." The really discreet witness might reply, "That is not for me to say; it is for others to draw conclusions from my evidence; I am here only to answer relevant questions, not to make suggestions." But such an answer—if the average witness had the prudence, the experience, and the self-restraint to make it—would probably damage him with a jury from its apparent excess of caution and want of frankness. Questions of this type are usually invitations to argument, the first exchanges between counsel and witness in a sparring match in which counsel is a professional and the witness as a rule an amateur. It is, says Lord Hewart, a mischievous line of cross-examination.

Expert witnesses have less to fear from questions of this nature. They come to court prepared and equipped to make suggestions, to propound or support theories and to argue about them. Nevertheless, if the sparring match goes too far, they may be glad to remember the words of the Lord Chief Justice and to seek the protection of the Court. The particular case which elicited Lord Hewart's observations deserves notice as one in which counsel on both sides had overstepped the line. The charge was one of assault under the Criminal Law Amendment Act. It is a well-known principle of English law that, when an accused person is on his trial, the prosecution must not mention anything which suggests that his character has been otherwise than good, unless the accused himself puts his own reputation too high, or unless he attacks the character of a witness for the Crown. When the accused was giving evidence on his own behalf at Manchester his counsel asked him questions indicating that he was a respectable family man. This was putting his character dangerously high, because the accused had formerly had a bastardy order made against him. Though the defending counsel had thus, in Lord Hewart's opinion, gone too near the line, the prosecution did not take advantage of the position at this stage by counter-attacking with evidence of the bastardy order. Presently, however, in cross-examining the accused man, counsel for the prosecution in turn overstepped the line by asking such questions as the following: "Can you suggest any reason why the girl should invent this story? Do you regard her story as blackmail? Do you agree she is trying to shield some boy?" Naturally, these questions lured the witness into answers which could be construed into an attack on a witness for the Crown, and the Court thereupon allowed evidence to be given of the previous bastardy order. The Court of Criminal Appeal has now held that the questions (and the use made of the answers) were unfair and has quashed the conviction.

Medical witnesses must expect the converse treatment. The cross-examiner, instead of asking them to attack the reputation of the expert witnesses whom he has called, will invite them to acknowledge their high qualifications. Here again the discreet answer is the safest. Mr. Justice McCardie has been saying that it is a very serious thing for a judge to restrict cross-examination. But forensic excess is usually staged with a jury for audience. And, even if judges will not interfere, juries sometimes find means of expressing their disapproval.

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RECENT RESEARCH INTO SCARLET FEVER.

It has long been something of a reproach to modern medicine that the investigation of the eruptive fevers has not progressed pari passu with the advances made in other fields. When we read the masterly accounts of small-pox, scarlet fever, measles, or typhus left by Trousseau or another of the great masters of what may be called the "clinical period," we realise, with a sense of uneasiness, that, in a day of wide application of modern methods of research, there is little which we can add to the descriptions of the processes of these diseases, as left by them. There are, of course, excuses and explanations. Infectious diseases, in the interests of the community, require to be isolated, and it is a regrettable fact that pathological research is only exceptionally provided for within the walls of our fever hospitals. While this is so the very protective measures necessary for the common weal may, in the long run, *defy the end in view by retarding the* progress of our knowledge of infectious diseases. During the last few years the possibilities of the immense and largely untouched field of investigation which these diseases offer has been more clearly perceived, and a large amount of attention has been devoted to them, more especially in America.

Amongst the results obtained those which have an important bearing upon the question of the ætiology of scarlet fever are now being widely tested in all countries, and have achieved the notoriety of a question in Parliament this week. Researches on the value of the Dick test in the diagnosis of this disease by C. C. Okell and H. J. Parish, and by Herbert Henry and F. C. Lewis, with workers in the Birmingham fever hospitals, were recorded in our last week's issue. Since 1921 there have appeared from time to time a series of papers by Gladys and George Dick which have shed a good deal of light upon the ætiological significance of the streptococcus in this disease, and have adduced some suggestive results. It has long been recognised that this organism had a more than casual relationship to scarlet fever, but opinion has been divided as to whether it was the actual causal agent or merely a concomitant infecting organism which became increasingly active in the altered conditions produced by the disease; thus, although not responsible for the malady, it might be the cause of the suppurative complications in which it is constantly demonstrable. To assert with confidence that a given organism is causal in any disease it is necessary to satisfy certain conditions first clearly enunciated by Koch; these require that the organism shall be constantly associated with the lesions and that, when recovered from them and cultivated in a pure state, it shall be capable of reproducing the disease. This last condition is often hard to fulfil, since it sometimes requires human experiments, the diseases produced by pathogenic organisms in the lower animals often being very inexact reproductions of the disease as it spontaneously occurs in man. Hæmolytic streptococci have long been known to be constantly present in the throat in scarlet fever, and the specific and rather well-marked characters of this group were described, under the title of *Streptococcus anginosus*, by F. W. Andrewes and T. Horder in their pioneer paper on streptococcal classification in 1906. The constancy of these rather special, long-chained types of streptococci is a universally acknowledged fact, but any proof of their causal relationship more solid than mere presumption has hitherto been lacking. Of recent years there has even been a tendency to regard scarlet fever as a disease possibly due to an ultramicroscopic virus. In the absence of any direct fulfilment of Koch's third postulate, however, a considerable amount of supplementary evidence has been forthcoming to indicate a reaction between the body and the scarlet fever streptococci which may be taken to indicate an actual invasion by the latter, and hence be interpreted as indicating their ætiological significance. Further, the work of Dochez and others has tended more firmly to establish the identity and to delimit the group of streptococci found in this disease upon immunological lines. It is held, and there is considerable confirmation for this, that these organisms form a distinct and specific agglutinable group amongst the hæmolytic streptococci, and that the serum of convalescents will agglutinate hæmolytic streptococci from scarlet fever, but will fail to agglutinate the ordinary pyogenic strains.

To the separation of this group by immunological, and consequently highly specific means, there has been added direct and indirect evidence of the rôle of the organisms by the work of the **DICKS**. They claim to have reproduced the disease in susceptible volunteers by the inoculation of pure cultures of the organism. This work still awaits confirmation. On the side of indirect evidence they have introduced a test, akin to the now familiar Schick test in diphtheria, which consists in the intradermal inoculation of a minute amount of a toxic substance produced in cultures of the scarlet fever streptococci. This, in individuals who have never suffered from scarlet fever and are susceptible, produces a small focus of erythema comparable to the scarlet fever rash. In convalescents from the disease the reaction is usually negative, and the toxin is, moreover, neutralisable by the serum of convalescents, or by that of animals injected with the specific streptococci. Obviously the importance of this work lies not in the mere demonstration of the reaction and its possible diagnostic value, but, if the ætiological rôle of the streptococcus be proven, in pointing the way to the detection of susceptible individuals, and the production in these of artificial immunity upon similar lines to those adopted in diphtheria. The work of **OKELL** and **PARISH** generally substantiates these claims in so far as the condition in convalescents is concerned, since in 120 of these they found the test positive in 18 and negative in 82. Owing to the admitted uncertainties in the diagnoses it is possible that the figures for the positive results may even be too high. On the other hand, the results in a population of 95 "normal" students were largely anomalous. Here 20 persons giving a history of scarlet fever gave positive results to the extent of about 65 per cent., whilst 75 with no such history gave an incidence of 76 per cent. of positive reactions. These figures, in so small a group of persons, show no significant difference, and though it is undesirable to draw any inference from insufficient data, should these results be reproduced in an adequate number of observations it would indicate that the factor influencing the test, which is taken to represent immunity or susceptibility to the streptococcus, is not the same thing as immunity to the disease scarlet fever, which is usually a life-long affair. A further clinical test of interest in this connexion is that known as the Schultz-Charlton phenomenon. This consists in the fact that the serum of a convalescent from scarlet fever will, when injected into the skin of a patient showing the rash, produce local bleaching of the scarlet fever rash. This is a specific property of the serum and one not present in normal human serum or in the serum of animals; the reaction is also specific for the scarlet fever rash, being absent with similar eruptions not due to this infection. Work at present under way, both in this country and in America, tends to show that a like effect is produced by the serum of animals which have received immunising injections of the scarlet fever streptococcus.

The whole of the investigations we have been reviewing are as yet in the experimental stage, and much needs to be done before their worth can be finally judged. Such evidence as has been produced, however, goes to focus attention upon the possibility of the streptococcus being the actual ætiological agent of this disease. With the wider application of these tests it will be interesting to learn the results obtained in puerperal scarlet fever and in those cases of wound infection which simulate this disease; while greater knowledge of the bacteriology of this section of the streptococcus group must result in fresh attempts at serum therapy. Such attempts are indeed already being made. It is noted by **OKELL** and **PARISH** that antitoxic serum, prepared in the institute to which they are attached, produces the Schultz-Charlton phenomenon and therefore has some properties in common with the serum of convalescents. In America also the matter is being closely investigated and, as noted in the *Journal of the American Medical Association* of March 14th, two types of anti-serum are in the field. The one, an antistreptococcal serum proper, has been produced by **DOCHEZ** and **BLAKE**; this differs only from the previously tried and abandoned antisera, which date back to **MARMOREK'S** work, in its being prepared from serum-typed scarlatinal strains of the organisms and in a rather special technique of preparation. The other is an antitoxic serum, more comparable to diphtheria antitoxin, which has been prepared by injecting horses with the Dick toxin; this serum, as **HENRY** and his collaborators show, may probably be prepared in concentrated solutions. It is possible that a combination of these sera may be more potent than either of the two utilised singly.

THE IRISH FREE STATE AND THE MEDICAL AND DENTISTS ACTS.

THE question of the position of the Irish Free State in connexion with the Medical and Dentists Acts of the United Kingdom first arose in January, 1922, when the Secretary to the Provisional Government of Ireland Committee wrote a letter to the Ministry of Health, in which it was set forth that constitutionally the position would be that the arrangements then in force would continue unaltered unless, and until, the Parliament of the Irish Free State or Northern Ireland saw fit to legislate for practitioners within their respective areas. It was within their power to pass such legislation, and, if so, consequential legislation by the British Parliament might be necessary. A reply was sent that the repeal or alteration of the parts of the Medical and Dentists Acts concerned would be very difficult without dislocating the machinery of the Acts as regards the registration of practitioners holding Irish qualifications; as regards the constitution of the General Medical Council; and as regards finance. It was suggested that it was perhaps unnecessary to take any legislative steps at that time, the best plan being to wait and see whether separate Irish legislation was proposed.

In March, 1924, attention was drawn to the Irish Free State (Consequential Adaptation of Enactments) Order, 1923, wherein it was provided that references in any enactment passed before the establishment of the Irish Free State to the United Kingdom, should, in the application of the enactment to any part of Great Britain and Ireland other than the Irish Free State, be construed as exclusive of the Irish Free State, except as regards certain Acts mentioned in the schedule. In the schedule, however, the Medical and Dentists Acts were not specifically mentioned. The question therefore arose whether these Acts thereby ceased to apply to the Free State. The matter became acute at this time, because the election of the Dental Board was pending and it was essential that the question with regard to its constitution should be cleared up. The question would also arise in connexion with the election of Direct Representatives of the Council by medical practitioners resident in the United Kingdom, which was to take place later in the same year. It seemed to be quite clear that, under the Order above referred to, it was no longer necessary for dentists in the Irish Free State to retain their names on the Dentists Register of the United Kingdom, unless they wished to practise in Great Britain or Northern Ireland, but beyond this the matter was still somewhat obscure. A legal opinion was obtained from counsel of eminence that the electorate for the Dental Board was confined to dentists practising in Northern Ireland, and that the member of the General Medical Council appointed to represent the Council on the Dental Board must be a member from Northern Ireland. The position in regard to dentists therefore appeared to be practically decided, but the question of the application of the Medical Acts, which was the more important, still remained to be settled. An important meeting of those concerned took place at the Privy Council Office in July, 1924, at which the terms of a Bill to be introduced into the Saorstát were agreed upon; and it was then understood that legislation would be introduced into the Irish Free State Parliament immediately and be followed by a short enactment in the United Kingdom to put the question of interim registration in order. Unavoidable delay, however, occurred, and the Free State Government asked that the *status quo* might be preserved until the problem had been legally solved. This was agreed to on behalf of the Council; but it was not until the beginning of the current year that a new Act was passed by the Parliament of the Irish Free State and received the Royal Assent on Feb. 21st, 1925. The Act (Saorstát Eireann—No. 2 of 1925) authorises the General Council established by the Medical Acts to continue temporarily to exercise jurisdiction and authority under those Acts in respect of medical practitioners in Saorstát Eireann. Legislation is about to be introduced into the British Parliament which will have the effect of completely removing the remaining difficulties. It will be noted that the Southern Ireland Act continues in force for one year. Unless there is a change of policy in the Irish Free State, it is reasonable to hope that it may be continued under an Expiring Laws Continuance Act.

To sum up, the position now is as follows:—The Medical Acts of the United Kingdom have effect in Southern Ireland as they had before the establishment of the Free State; Irish qualifications continue to be registrable on the British list; and the Irish Universities and Corporations continue to be represented upon the General Medical Council, which still continues to have the jurisdiction throughout Ireland which it possessed before the formation of the Irish Free State. With regard to dentists, as the Dentists Acts do *not* now apply as before to the Free State, qualifications obtained will be registrable only individually, and on their respective merits, as in the case of British possessions like Canada or Australia. Dentists in the Free State, already registered under the Acts of 1878, 1921, and 1923, whose names are still on the Dentists Register, may continue to have them published therein on fulfilment of the prescribed conditions. All registered practitioners, wherever resident, continue to be *ipso facto* under the disciplinary jurisdiction of the Dental Board and the General Medical Council. There is, however, no special Dentists Act at present operative in the Free State. It has been stated that separate legislation for the control of the practice of dentistry is contemplated by the Free State authorities, but meanwhile no regulations for the control of the dental profession have been issued.

Royal Commission on National Health Insurance.—The twenty-fourth meeting of this Commission was held at the Home Office, Whitehall, on April 2nd, Sir Andrew Duncan in the chair. Evidence was given on behalf of the National Federation of Employees' Approved Societies by Mr. Henry Lesser, President of the Federation. Sir Thomas M. Legge, of the Home Office, senior medical inspector of factories, gave evidence on the medical work in factories and workshops, and suggested possibilities of development in that work. Mr. V. L. Bilbey, the clerk in charge of the Ministry of Health inquiry room, was examined as to the volume and nature of the inquiries and complaints made by employers and insured persons. The Commission announce that proof copies of the oral evidence and the relative statements submitted at the meeting, March 19th, are now on sale at H.M. Stationery Office (1*s.* 6*d.*).

Annotations.

"Ne quid nimis."

SPECTACLES AND CANCER.

The experimental demonstration that cancer can be produced by chronic irritation renders of special interest every clinical observation on man in which a similar relationship between chronic irritation and the onset of cancer can be demonstrated. A number of cases have been reported from America during the last few years[1] [2] [3] in which injury due to the wearing of badly fitting spectacles has been made responsible for the onset of cancer. Altogether 13 such cases have been recorded. In most of these the site was the bridge of the nose. In a paper entitled the Menace of Poorly Fitted Spectacles in Old Persons, Dr. J. J. Morton[4] recently reported four such cases which have come under his notice within the short space of three years. One of the patients was 50 years of age, the other three well over 60. The sites of the tumour were either the temple, where the bow of the glasses rubbed, or in one case behind the ear. One of the tumours, which had been noticed for two years, was a cutaneous horn; the other three were diagnosed on microscopic section as basal cell carcinomata. The tumours were treated with radium, apparently with success. It is interesting to note that in these cases the form of chronic irritation was mechanical. Another interesting point in the history of these cases is that a lesion of the skin at the site where the tumour developed later had been noticed by one of the patients 12 years, by another patient 20 years, before the cases came under Dr. Morton's notice. The period of chronic irritation must therefore necessarily have been longer. It is a significant fact that the very different forms of chronic irritation, such as tar cancer, aniline cancer, and the mechanical irritation of these cases, require a prolonged period, extending over very nearly the same length of time—about 15–25 years. Under very exceptional conditions this period may be shortened, as instanced by the cases quoted by Dr. Marshall Findlay in The Lancet of April 4th, perhaps because the intensity of the irritation and the site to which it was applied were particularly favourable. It seems likely that, as Dr. Morton suggests, such cases of cancer due to badly fitting spectacles are not infrequent in old people, but have not been recorded in the literature.

THE EFFECT OF WINE ON PULMONARY TUBERCULOSIS.

Professor Arturo Campani, director of the Red Cross Sanatorium at Cuasso al Monte, publishes[5] the results of his investigations on the 106 patients there with a view to determine the influence of alcohol in inducing or aggravating pulmonary tuberculosis. These patients were all males of the age between 20 and 17, mainly war pensioners, and may be divided into four groups, heavy, ordinary, and moderate drinkers and abstainers. For statistical purposes Prof. Campani took three groups: (1) All the patients en bloc to establish an average; (2) heavy drinkers; and (3) abstainers. Each case was investigated with regard to age, variations of weight, stage of the lesion, occurrence of hæmoptysis and fever, and presence or absence of Koch's bacillus. Without giving actual figures, it was found that the average age was greater in those who used alcohol in the form of wine, the weight was slightly greater in the drinkers than in the abstainers, the prevalence of right-sided lesions also greater in the former, while in the latter bilateral lesions had a percentage more than double. Fever and the presence of Koch's bacillus were more marked in abstainers. As to the percentage of improvement under sanatorium treatment, including the so-called cures, the general average was 60·5 per cent., with 76 per cent. in drinkers and 55 per cent. in abstainers, while the mean mortality of 1·9 per cent. was divided between 0·6 per cent. in drinkers and 3·1 per cent. in abstainers; on the other hand, there was a slightly increased prevalence of hæmoptysis among the drinkers, 66 per cent. as against 62 per cent. in the abstainers, but the prevalence of acute forms, or acute forms occurring in the course of chronic, was 0 per cent. in the drinkers and 8·1 per cent. in the abstainers, the average being 3·2 per cent. In face of these figures, says Prof. Campani, it is difficult to resist the desire to affirm that wine is far from being a poison predisposing to tuberculosis, but rather constitutes a means of defence against the invasion of the disease. He admits that statistics are often deceitful, but considers that the assertion that alcoholism generates tuberculosis should be subjected to severe and serious criticism for the reason that it is contrary to a well-known anatomical truth—namely, that alcohol directly or indirectly favours the formation of connective tissue, that it is a cirrhotic and sclerogenic poison par excellence. It is known that tuberculosis does not fall into line where there is a tendency to sclerosis; it is rare in the early stages of cirrhosis either of the kidneys or liver or heart and lights up only as a terminal cachectic factor. It is difficult to imagine that a fibrogenic substance, a producer of the very tissue which is the sole barrier to the extension of tuberculosis, should be harmful in the clinical picture of the disease, or that such a wasting disease should militate against an aliment which is recognised as having a saving function in organic metabolism. Prof. Campani concludes by stating as his opinion that neither general statistics nor clinical observation have strengthened the generally widespread idea that alcohol, at least in our temperate climates, and especially in the form of wine, is a harmful agent in pulmonary tuberculosis, but that his present observations, although not of large extent, seem to prove the contrary.

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[1] L. F. Herz: Med. Record, 1917, vol. xci.
[2] S. E. Sweitzer: Jour. Amer. Med. Assoc., 1917, vol. lxix.
[3] H. H. Hazen: Ibid., 1921, vol. lxxvi.
[4] J. J. Morton: Ibid., Feb. 28th, 1925, vol. lxxxiv.
[5] Il Policlinico, Practical Section, March 2nd, 1925.

SOME CURIOUS OBSERVATIONS ON THE TEETH.

A VERBATIM reprint[1] of the first known work on dentistry in the English language has just been published. It has a second claim to interest, possibly of greater value in the sale-room, in being one of the few examples of printing in Dublin in the seventeenth century. Although the title of the book has been given in various dental bibliographies during the nineteenth century, nothing was known of its contents until Mrs. Lindsay, L.D.S., whose skill and enthusiasm as a dental bibliographer is well known, unearthed a copy from the British Museum. In a scholarly introduction she has gathered together such information as is available about the book and the author. The book first appeared as part of a larger medical treatise in 1686. In the following year it was printed separately under the title given above and with the author's name. Of this edition only eight copies are known. By a curious chance, soon after Mrs. Lindsay had discovered the copy in the British Museum but before she had published an account of it, Dr. Weinburger, of New York, found a copy among a collection of books which had come from this country and described it in an American dental journal. Of Charles Allen nothing is known; evidently he was in practice in Dublin. In publishing this book he appears to have been influenced by the possible increase in his practice rather than by a love of science. Thus in a chapter on the alteration of the teeth with their remedies, he refers to a dentifrice which he has compounded. With a delightful ingenuousness he ends his pamphlet thus; "But I shall always deal candidly with everybody, never undertaking anything but what I shall be able to do according to agreement, and if anyone will be pleased to come to my chamber he may have my advice (concerning anything that belongs to my profession) gratis at any time." There is shrewd sense in much of what Allen says and some of his statements are quite startling in their modernity. His account of the pathology of pulpitis, for instance, is substantially accurate. In discussing the "restauration of the teeth," Allen speaks of the operation of implantation which he considers inhumane and only "robbing Peter to pay Paul." He suggests as an alternative the possibility of replacing a carious tooth by one taken from an animal, such as a dog, sheep, goat, or baboon. There is nothing to suggest that he ever practised this method and evidently it is a by-product of an ingenious imagination. It was a happy thought on the part of Mrs. Lindsay to reprint so quaint a pamphlet, for it has an historic interest as representing the commencement of dental literature in our language.

GAS CYSTS OF THE INTESTINE.

GAS cysts have been known for a long time to occur in the intestines of certain animals, and John Hunter described this condition in the case of the pig. The first undoubted case of this rare disease in man was described by Bang in 1876, and recently H. W. Mills has collected 97 published cases and added three of his own to bring the total to 100.[1] These gas cysts of the intestine may be discrete or confluent, sometimes occurring in masses large enough to cause mechanical obstruction, and occasionally a single large cyst may occur instead of multiple small ones. The cysts are frequently pedunculated and so extremely like hydatid cysts of the peritoneal surface of the intestine that they can often only be differentiated by a microscopical examination. They may occur over a few inches or along the whole course of the intestine. A diagnosis is usually made during an operation for intestinal obstruction or at a post-mortem examination, when putrefactive changes may apparently give rise to similar but not identical cysts. The disease is benign in itself and tends to spontaneous cure, but it may cause complications by its mechanical effects. Excision of the affected part of the gut may be necessary if such mechanical obstruction has occurred, and, on the other hand, if at operation some mechanical cause for the condition of gas cysts be found, this must be dealt with. For it appears that the mechanical theory of the origin of these cysts is most widely supported. Mills says that the question of ætiology is still *sub judice*, and he describes the theories advanced under four headings. According to some authorities these cysts are formed by an invasion of the wall of the intestine by a gas-producing bacillus of the coliform group or by some attenuated anaerobic organism. Such anaerobic bacteria appear to have been isolated in one case, but in the large majority the contents of the cyst are sterile. A chemical theory has been advanced, without much evidence, and a neoplastic theory which looks upon the whole condition as a new growth, the cells of which secrete gas. The theory which obtains most support, however, is that which looks upon these gas cysts as being formed mechanically. Although the cause is not always the same, it seems that obstruction somewhere in the gastro-intestinal tract is commonly present and a stenosis of the pylorus following ulcer in this situation has existed in a very large number of reported cases; according to one author in as many as 72 per cent. This mechanical theory states that the action of a distended stomach drives gas along the base of an ulcer under the peritoneal coat and intestinal peristalsis helps to pass the gas along. In one case a constriction, with some ulceration, occurred in the ascending colon. Above this gas cysts appeared, their presence being limited to this portion of the bowel by a sharp angle at the hepatic flexure. In some cases acute infection seems to play an additional part in the production of gas cysts, and they may then contain gas from the intestine plus that produced *in loco* from a secondary infection of some traumatic lesion in the intestinal mucosa. The nature of the gas in these cysts is still unknown: it is apparently odourless and non-inflammable. Oxygen is always present, thereby, according to some authorities, excluding the possibility of a bacterial origin when hydrogen and carbon dioxide would be expected without any oxygen. The cases collected in this paper come from all over the world, so the condition, rare as it is, appears to be universally recognised. In this country Nitch and Shattock gave an account of two cases and discussed the ætiology before the Royal Society of Medicine in 1919.

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[1] Some Curious *Observations* on the Teeth. By Charles Allen. (1687.) With an introduction by L. Lindsay. London: John Bale, Sons and Danielsson. 1924. Pp. 26. 5s.

[1] Surgery, Gynecology, Obstetrics, March, 1925, p. 387.

FATTY CONTENTS OF THE OVUM.

At a recent meeting of the Anatomical Society at King's College, London, Prof. Arthur Robinson gave an interesting and novel account of the non-saturated fats present in certain mammalian ova. The photographs which were thrown on the screen showed very strikingly the variations in the fat content in different sorts of eggs, the ferret, for example, being heavily loaded with the substance, while the human ovum contains apparently none of it at all. It is well known that the indefinite class of "lipoids" seems to form a kind of stable or permanent basis in cell-morphology, but these observations made by Prof. Robinson do not seem to apply to quite the same thing. That these fatty substances affect the morphological structure is apparent nevertheless, for the protoplasmic contents of the cell can be present only between and among their minute droplets. The observations are an important addition to the data available on an obscure and little known subject, and provide many new problems connected with the changes observed in the location of the fatty matter during the processes of further development. Prof. Robinson also drew attention to the fact that there seems to be no evidence at all of the path or means by which the non-saturated fat finds its way into the ovum, for there is absolutely no sign of its existence at any time in the cells or fluid surrounding the germ-cell in the follicle.

A DISEASE PECULIAR TO BREAST-FED INFANTS.

Japanese physicians have been aware for some years of the existence of a disease which occurs only in breast-fed infants, and which produces in them a profound disturbance of the central nervous system. There is still some divergence of opinion as to the existence of some relation between this disease and the presence of beri-beri in the mother. Dr. T. Tanaka has written an interesting account of this ailment,[1] illustrated by the clinical notes of eight cases which he observed. A prodromal dyspeptic stage, with vomiting or diarrhœa, is followed by the appearance of general cerebral symptoms such as irritability, insomnia, and drowsiness. If the child is taken from the breast at this stage rapid recovery of health takes place. If breast-feeding is continued, it is usual to find focal signs of cerebral involvement after a few days. Ptosis and upward rotation of the eyeball are the first of these to appear, and are followed later by crossed paralysis, incoordination and muscular asynergy, or some form of hyperkinesis, and occasionally by convulsions. Weaning the child is almost always followed by rapid recovery from the acute phase of the disease, with residual spastic paralyses which tend to improve more slowly. Of the author's cases only one was fatal; unfortunately there was no autopsy, and little light seems to have been thrown on the morbid anatomy by the other authors cited. Dr. Tanaka reviews critically the question of the distribution of the cerebral lesions. From the clinical signs described they are obviously extensive and appear to be multiple. Lesions of the pons, mid-brain, and basal ganglia must all have been present, sometimes in the same case. Dr. Tanaka was impressed by the resemblance which the physical signs and clinical course of these cases bear to those of Wernicke's cases of polio-encephalitis hæmorrhagica superior, and he has reproduced the account of two of these for comparison; he believes this disease to be of a similar pathological nature. The resemblance is certainly very close, and verification of Dr. Tanaka's hypothesis by a study of the morbid histology when opportunity presents itself may be awaited with interest. The author is of the opinion that the disease is not connected with maternal beri-beri; apart from this point, he has made little reference to the problem of the exact causal factor present in human milk.

THE EPIDEMIOLOGY OF SLEEPING SICKNESS.

Dr. G. D. Hale Carpenter, who is well known for his researches on the tsetse-flies of Central Africa, and who is the author of a particularly charming book entitled "A Naturalist on Lake Victoria," has been engaged on an investigation into the epidemiology of sleeping sickness in Central Kavirondo, Kenya Colony. The policy adopted by Kenya, during the epidemic of sleeping sickness which raged round the lake at the end of the last century, differed materially from that of Uganda; the Kavirondo people were not forcibly removed from the lake shore, whereas in Uganda wholesale depopulation of all islands and of the mainland within two miles of the water was enforced. The results which one would be led to expect as the outcome of these measures would be a natural re-distribution of the population, certain parts being avoided as too dangerous for habitation, while the inhabitants of others would be liable to suffer from outbreaks of the disease. The researches of Dr. Carpenter were undertaken as the result of the suggestion of Mr. W. F. Fiske, formerly medical entomologist in Uganda, that the number of male *Glossina palpalis* caught by one fly-boy per hour might constitute a standard of safety. The limit for a population of over 30 per square mile, living in contact with the fly along the coast, would be ten males caught per hour. This suggestion was confirmed by the investigations. Only four localities were discovered where trypanosomiasis now exists, and in these areas there was a population of density of over 40 per square mile, and *Glossina palpalis* was caught at the rate of more than 15 males per boy per hour. The epidemic of sleeping sickness in Central Kavirondo was introduced about 22 years ago. Mageta Island was evacuated, but the subsequent return of the population caused a recrudescence of the disease which led to a second evacuation, a second return and a renewal of sleeping sickness in 1920–21, which led to a final evacuation in 1922. The tsetse-fly—*Glossina palpalis*—occurs plentifully along the 100 miles of coastline examined between the Siò River and the mouth of the Kavirondo Gulf; ample evidence was obtained that the chief food-supply in this area consists of non-mammalian blood. *Glossina brevipalpis*, on the other hand, occurs in the dense bush where hippos sleep, and much prefers their blood to any other. It was found that stretches of country behind dense belts of papyrus are free from tsetse-flies, and it is suggested that the population should be encouraged to return to those parts in preference to others. In other areas the general population may be rendered reasonably safe by clearing all landing and watering places for 200 yards along the coast on each side of the actual landing or 50 yards back from the water. It was found impracticable to examine the lake shore population systematically, nor was it considered expedient to establish the diagnosis by gland puncture, but reliance was placed upon palpation of the cervical and axillary glands. No advanced cases of the disease were seen, and the majority of those diagnosed as trypanosomiasis seemed to be in good health. The presence of these infected people in a settlement on the mainland in close contact with Jaluo natives, of whom none so far have acquired the disease, is certainly strong evidence that the glossina is the chief agent in its dissemination.

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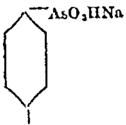
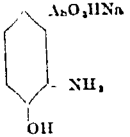
[1] Über die sog. Frauenmilch-Intoxikation. Mitteilungen aus der Med. Fakultät der Kaiserl. Kyushu Universität, Japan, Band ix., Heft 1, 1924.

STOVARSOL.

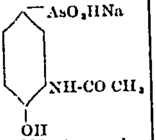
The first three months of the present year have seen what might be termed a revival of discussions upon therapy in syphilis. The various medical journals of European countries and America have published original papers, comments, and discussions on both the classical forms of treatment, and also on some new methods. Whereas the English and American publications deal almost exclusively with such problems as the merits of bismuth in the treatment of syphilis, French and German papers refer in addition to a comparatively new remedy, stovarsol, or 190. The history is as follows. In 1922 C. Levaditi and A. Navarro-Martin[1] began to study the spirillicidal action of bodies related to atoxyl and prepared by Fourneau. One of the first of their series was amino-oxy-phenyl arsenite of sodium, or 189. Although this substance possesses marked therapeutic properties, the ratio of the tolerated dose to the curative dose was low, and the investigators prepared a further series of derivatives on similar lines. They found that the acetyl derivative of 189 possessed much greater curative powers, and the toxic properties were much reduced. The relation of the three bodies, atoxyl, 189, and the acetyl derivative, 190, or stovarsol, can readily be seen from the following formulæ:—



Atoxyl.



189.



190, stovarsol.

One of the most remarkable properties of stovarsol is that it can be readily absorbed from the alimentary canal. All the curative experiments of Levaditi and Navarro-Martin were conducted by oral administration of the remedy. The first test of stovarsol was to try its curative powers upon the various spirochætal infections in rabbits, and since it was proved to be very potent, the investigators applied it to human syphilis. In collaboration with A. Marie, Levaditi and Navarro-Martin performed a very interesting experiment. A volunteer was scarified on both arms and a "virus dermotrope" was rubbed in. At the same time a monkey was inoculated with the same virus. Two and a half hours later 2 g. of stovarsol were given to the human subject by mouth, and the dose was repeated 10 hours later. Whereas the monkey developed typical syphilitic lesions, the volunteer rested immune from any symptoms, and his Wassermann reaction remained negative throughout. This experiment suggested that stovarsol might be used as a prophylactic. In collaboration with other workers[2,3] it was demonstrated that this drug, taken by the mouth, was able to protect against syphilis. These clinical experiments, of which detailed protocols have been published, were conducted with great care and thoroughness. Thus it was shown that the wives of syphilitics with primary lesions, although fully exposed to infection, could be protected by the oral administration of stovarsol alone. 2 to 4 g. may be given with safety, and the investigators claim that in stovarsol lie the properties of the ideal prophylactic substances. Its value apart from syphilis has been pointed out by many workers. Thus E. Marchaux[4] described its use in lamblia infections and in amœbic dysentery. C. Baermann[5] described cures effected by it in cases of framboesia. Levaditi summarised the views of his school upon the prophylaxis of syphilis in an address to a conference at the Institut Pasteur in April, 1923, where he said: "J'estime qu'en pratique, lorsqu'il s'agira d'un sujet ayant eu des rapports suspects, une cure de deux à trois grammes de stovarsol, commencée dès le lendemain, à jeun suffiront. En cas de contagion certaine ou très probable (rapports répétés avec un syphilitique à manifestations ouvertes), il y aura lieu de suivre une cure de 4 à 5 grammes à raison d'un gramme par jour (4 comprimés)."

During the last few weeks two papers upon this question have appeared. M. Petzetakis[6] deals with the use of the drug in amœbic dysentery. His conclusions are instructive. He found that in doses of 0·5 to 1·0 g. by mouth, stovarsol was of the greatest use in the treatment of amœbic dysentery. In the acute stages the remedy could be given with complete safety, and very beneficial results were obtained, as evidenced by a decrease in the number of stools and a diminution of pain, and other clinical manifestations of the conditions. From an extensive examination of the fæces this observer concluded that the drug possessed "propriétés amœbicides incontestables." Resistant or chronic cases responded particularly well; and in cases intolerant to emetine and in infants it is regarded by the author as invaluable. He also recommends its use as a prophylactic. These observations of Petzetakis thus supplant the work of Marchaux already quoted. Weiner Worms[7] considers the drug from an experimental point of view. His results of the curative effects of stovarsol upon spirochætal infections in rabbits are not in strict agreement with those of the original investigators. His results are summarised in a series of tables, and the word "nichtgeheilt" is applied frequently to rabbits infected with the *Spirochæta cuniculi*. That the drug possesses marked protective powers Weiner Worms does not deny, but he implies that in order to get complete protection, there is a danger of pushing the drug to toxic limits.

It could hardly be expected that the new remedy would prove to be entirely free from the disadvantage which limited the practical value of its predecessors, the difficulty of finding a dosage adequate for the destruction of the invading organism and yet not toxic to the tissues of the host. However that may be, the convenience of oral administration is so great that the profession will welcome the introduction of this compound. If the results hitherto obtained are substantiated in wider fields there can be no doubt that the drug is a remarkable advance on former products.

THE BRITISH SPA FEDERATION.

At the annual meeting of this Federation, representing Bath, Buxton, Cheltenham, Droitwich, Harrogate, Leamington, Llandrindod Wells, Woodhall Spa, Strathpeffer and the New Zealand Government Spas, which has just been held in London, the conditions of membership, with which every spa admitted to the Federation must comply, were formulated and adopted. Under these principles of standardisation a spa, to be recognised by the Federation, must possess natural mineral waters of known therapeutic value; an approved bathing or pump-room establishment, to be in the hands of a public body or an approved private body; a local medical authority suitably equipped in the specialty; and proper hotel accommodation, with approved amenities and sanitary conditions. Further, the Federation enjoins that treatments can be given only under medical prescription not more than

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[1] Note présentée par M. Roux à l'Acad. de Sci., Séance du 27 Mars, 1922, p. 893.

[2] Fournier, L., Levaditi, C., Navarro-Martin, A., and Schwartz, A.: Compt. rend. Acad. des Sciences, 21 Mai, 1922, p. 1380.

[3] Fournier, L., Guenot, L., and Schwartz, A.: Ann. de l'Institut Pasteur, No. 11, November, 1922, p. 729.

[4] Cf. Biol. Médical, No. 4, Mai, 1923, p. 178.

[5] Arch. f. Sch. und Trop.-Hyg., 1923, p. 229.

[6] Presse Médicale, March 7th, 1925, p. 299.

[7] Deutsch. Med. Woch., Numm. 11, 428, 1925.

12 months old, except in the case of certain minor treatments definitely specified by the local authority. Before the admission of any spa to the Federation, three representatives of that body (one being a spa medical practitioner) will visit and report along the lines thus indicated, the Federation in this way emphasising the necessity of a high standard of practice at the British spas and of coöperation between its members and the medical profession. It is the aim of the federated British spas by these and other means, combined with the research work which is now going on at several spas, to provide medical men with hydrological centres in this country, at which they may be sure of their patients receiving efficiently administered treatment.

The hon. secretaryship of the Federation is to be held in turn by representatives of the various spas, and Mr. John Hatton, the director of the baths of Bath, was elected to that office in succession to Mr. F. J. C. Broome, general manager of the Royal Baths, Harrogate, who received the warm thanks of the Federation for the valuable service he has rendered.

THE ENERGY UTILISATION IN EMOTIVE EXPRESSION.

SOME experiments have recently been carried out by Dr. Hermann V. Schroetter, of Vienna,[1] in which the energy usages in expression have been compared with those of ordinary speech. The experiments were made on a well-known elocutionist, who for purposes of control remained at rest, or read, as in a lecture, without emotional expression. The results so obtained were compared with those obtained in laughing, crying, or sobbing. In the ordinary reading it was found that about 20 L. of air were breathed per minute, while the energy expenditure deduced from the respiration data showed an increase of 85 cal. per hour above the resting value. For laughing and sobbing the volumes breathed were 22 and 12 L. per minute respectively, while the increase above the resting value was 12 and 5·5 cal. respectively. The actual work involved in speech amounted to 9250 kilogram-metres per hour, that in laughter 1300 kgm., and that in sobbing only 580 kmg. per hour. Sobbing is thus, from the physiological standpoint, a cheap form of entertainment. Each spoken syllable is calculated to cost about 0·5 kgm. The loss of moisture by the lungs is about the same in speech as in laughter —viz., about 42 g. per hour—while sobbing only accounts for a loss of about 18 g. per hour. Dr. Schroetter's experiments are of a thoroughly interesting character.

PHYSIOTHERAPY IN HEART DISEASE.

DURING and after the war graduated exercise proved to be the mainstay in the treatment of soldiers suffering from D.A.H.; yet, as Dr. G. H. Hunt rightly says in the first of a series of articles[2] dealing with massage and remedial exercises in medicine, writers on this subject have devoted but little attention to the fundamental principles which underlie the use of these measures in the treatment of organic heart disease. This appears to be due principally to lack of cooperation between the physician and the masseur, the former having been not unnaturally prejudiced against the use of massage on account of certain practices based on fundamentally unsound doctrines which still find a place in some of the textbooks on the subject. The so-called "local heart treatment" is a case in point. It is totally valueless in organic disease; and, by directing the patient's attention to the heart, it is positively harmful in the purely functional disorders. In the acute stages of heart disease, whether one is dealing with an active infection or with acute myocardial insufficiency supervening in the course of chronic disease, where the heart is already the seat of an old-established lesion, the supreme importance of absolute and complete rest has long been recognised. During the stage of convalescence, however, the institution of massage and breathing exercises is of value in aiding the venous return to the heart and in promoting the nutrition of the tissues, whereas the gradual addition of passive and active movements forms a suitable preparation for the somewhat sudden change to which a patient is subjected when he is allowed to get up for the first time. The increase in pulse-rate produced by standardised "test exercises" affords a simple and reliable means of graduating the duration and extent of the treatment at any particular stage of the illness, and serves to indicate the progress which is being made. At the present day various functional tests of the exercise tolerance have been so universally adopted, in supplementing the mere physical examination in cases of heart disease, that it is rather surprising that more attention has not hitherto been paid to the use of physiotherapy in this particular department of medicine.

PROFESSOR WARDROP GRIFFITH.

Dr. T. Wardrop Griffith has placed before the Council of the University of Leeds his resignation of the Professorship of Medicine. In a letter to the Council he has pointed out that in harmony with the rules of the General Infirmary at Leeds he becomes a member of the consulting staff next September, by which time he will have served for twenty years on the full staff. It is this fact which has led him to anticipate the age-limit for the tenure of office which attaches to professorships in the University; for although, as is happily the case in Leeds, members of the consulting staff have the privilege of admitting a limited number of patients to be under their care in the infirmary and continue to work within its walls, he felt that the best interests of the University would be served if he did not retain the professorship after he had retired from the full staff and the regular routine teaching which that involved.

The resolution passed by the Council of the University of Leeds in response to Dr. Wardrop Griffith's letter was as follows:—

> The Council accepts the resignation of the senior professor —Prof. T. Wardrop Griffith, with deep regret. He was appointed to the Chair of Anatomy in 1887 and transferred to the Chair of Medicine in 1910, a continuous record of 38 years. He began work in the old Medical School in Park-street and took an active share in the construction of the new school in Thoresby-place, in which he established one of the best anatomical departments in the Kingdom, filling it with many valuable collections, and in one cardiac section a unique collection of specimens prepared by his own hands. His assiduous attention rendered his tenure of office of the Chair of Anatomy little different from a full-time office, as every hour spared from hospital work and consulting practice was spent with energy in the department, and there is no department of its kind more entirely the creation of one man's zeal and love. In his tenure of the Chair of Medicine he has added to the lustre of its history by the high quality of his observations in clinical fields and able exposition of his subject, attaining an eminence acknowledged by his admission to the Order of St. Michael and St. George and the conferment of the honorary doctorate of Laws by his own University of Aberdeen. In both departments his courses of lectures have been noted for their vivid quality and the perfection of arrangement and delivery. In the Faculty and University he has played an important part by sound advice and an example of devotion for which a heavy debt of gratitude and affection is due. His resignation marks the completion of one of the soundest pillars on which the school has been reared, and the Council, looking forward to the support which will remain in his work and the effects of his work, desires to record its appreciation of his most valuable and enthusiastic services, its grateful thanks for the distinction he has brought to the University, and its cordial hope that he will, for many years to come, enjoy the ability to pursue the practice of his profession and add to the many contributions by which he has advanced the cause of medicine.

From this resolution, upon whose accuracy we congratulate Dr. Wardrop Griffith, it will be gathered that resignation of the official position is not accompanied by withdrawal from practice.

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[1] Monatschr. f. Ohrenheilkunde und Laryngo-Rhinologie, 1925, lix., pp. 1-27.

[2] Guy's Hospital Reports, January, 1925, p. 23.

ELIMINATION OF THE TUBERCULOUS COW.

ON several occasions recently both medical and veterinary societies have passed and submitted to various Government bodies resolutions in favour of the return to the statute book of the Tuberculosis of Animals Order, 1911, or to some up-to-date modification of it. Hence a paper on the elimination of the tuberculous cow, which was read by Mr. Thomas Parker, F.R.C.V.S., chief veterinary inspector for Newcastle-on-Tyne, before the congress meeting of the Royal Sanitary Institute in January last, is of particular interest. The paper is published in full in a recent issue of the *Veterinary Journal*, and Mr. Parker deals with the subject from the practical aspect of the veterinary inspector. He gives a number of sound reasons why immediate action should be taken and why our present method fails in preventing continued infection from tuberculous milk. The system of protection, as now in force, fails, he holds, (1) because not only the milk, of which the sample formed part, but also the daily supply from the same source, will have been consumed, probably in most instances for weeks, before the sample has been proved tuberculous or otherwise; and (2) because, although the sample has been proved tuberculous, the animal producing it may, in the meantime, be removed to some other herd and lost sight of. It seems ridiculous that a cow which has been proved by the tuberculin test, applied by a qualified veterinary surgeon, to be a disseminator of tubercle bacilli in her milk should not be put out of the reach of further harm by compulsory destruction; yet by the present method such an animal is merely removed from the herd and may be there is nothing to prevent her being sold to a dairy farmer in another district where inspection is not so strict. As Mr. Parker says, "It is absolutely essential, in any attempt to secure a wholesome milk-supply, to have all clinically tuberculous cattle removed from dairy herds, and this cannot possibly be done without regular veterinary inspection of all dairy herds throughout the country." He concludes his article by stating "that it should never be forgotten that the results we all desire will be attainable only in the inverse ratio as to the completeness and regularity of inspection and the promptness with which the disease is dealt with at its source. In no other way can we hope to arrive at a stage of affairs when it can honestly be said that we are attempting to eliminate the offending cow and thus prevent one of the completest and valuable of all foods being charged with the germs of a dangerous disease."

THE FACTORIES BILL.

LAST week, after we had gone to press, the Cabinet arranged that the Factories Bill should be proceeded with this session, a decision with which the medical profession will be in full accord. There is general anxiety in the House that the Bill should be presented in a form which would lead to its passage through Parliament with the united support of all parties, and it will probably be presented shortly after Easter.

IN accordance with general anticipation, and with no serious opposition whatever, Sir Humphry Rolleston, Regius Professor of Physic in the University of Cambridge, was re-elected on Monday President of the Royal College of Physicians of London.

PARIS: DERMATOLOGY AND VENEREOLOGY.—A post-graduate course at the Faculty of Medicine of Paris in dermatology, with lectures and demonstrations, will be held from April 22nd to May 25th, at the Hôpital St. Louis, and a course in venereology will follow at the same hospital from May 27th to June 24th. The courses are under the direction of Prof. Jeanselme, assisted by many distinguished colleagues. Further particulars may be obtained from Mr. Burnier, Hôpital St. Louis (pavillon Bazin), 40, Rue Bechat, Paris (X.).

Modern Technique in Treatment.

A Series of Special Articles contributed by invitation on the Treatment of Medical and Surgical Conditions.

CXVII.—THE TREATMENT OF LACRYMAL OBSTRUCTION.

OBSTRUCTION of the lacrymal passages leads to a troublesome epiphora for which the patient, usually after putting up with discomfort for weeks or months, finally seeks advice. The importance of treatment lies in the fact that these cases practically never recover spontaneously and that the presence of a chronically inflamed lacrymal apparatus is a constant serious menace to its possessor. It has been shown bacteriologically that the thickened atonic lacrymal sac in these cases acts as a culture-tube and reservoir for a varied assortment of virulent micro-organisms. The most important of these, and one which is very frequently present, is the pneumococcus, and when it is realised that this organism can in the presence of the least abrasion of the corneal epithelium give rise to a serious hypopyon ulcer, and even lead to panophthalmitis and loss of the eye, it is obvious that no case of chronic lacrymal obstruction should go untreated.

The first step in the treatment is the recognition of the type of obstruction, and here a consideration of the history, the age of the patient, and the coexistence of nasal or other disease is of assistance.

One may roughly group the cases into three groups, the first being the commonest, the second less common, and the third very rare. 1. The patient is an adult usually past middle age. There is a slight swelling at the site of the sac, and pressure on this causes regurgitation of pus or mucus into the eye. The obstruction is somewhere in the nasal duct. 2. The patient is an infant and the obstruction was noticed soon after birth. There is regurgitation on pressure over the sac. In these cases the nasal duct, which develops as a solid rod of epithelial cells, has failed to canalise and has remained blocked by shed epithelium. 3. The patient is usually young or very old. There is no regurgitation on pressure over the sac, and on inspection an abnormality of the punctum can be seen. In the young this may be a congenital displacement, excessive smallness or complete atresia; in the aged it is displacement forwards due to the laxity of the lid (senile ectropion). Blocking of the punctum by a scar, a foreign body, or a concretion may, of course, occur at any age.

The treatment in all cases should be in the first place conservative, operative measures being resorted to only when this fails.

Adults with Obstruction in the Nasal Duct.

In the first group the treatment can be considered under three headings: (*a*) Re-establishment of the natural passages. (*b*) Extirpation of the affected sac. (*c*) Establishment of a new passage. The nose should be carefully inspected at the outset, since it is obvious that treatment directed towards the cleansing of the inflamed sac will be of little avail if the lower end of the nasal duct is blocked by a polyp, a hypertrophied turbinate, or a misplaced septum. If any intranasal cause is seen this should be dealt with at once.

The infected sac may then be treated as follows: After cocainising the conjunctiva the lower punctum is dilated with a Nettleship's dilator so that it will admit the nozzle of the lacrymal syringe. It is never necessary to slit up the canaliculus at this stage, and, indeed, this should not be done at all unless absolutely unavoidable, since, although a large opening is thereby made into the sac, the capillary action of the small duct is lost and the epiphora may continue from this cause alone, even after the passages are clear. Warm boric lotion is used to syringe the sac. Two or three syringefuls are slowly and gently injected, the patient being told to swallow if he feels the fluid in his throat.

At first the fluid mostly regurgitates through the upper punctum, bringing with it flakes of muco-pus. The syringing should be done once a day and the patient instructed to empty the sac by pressure on it four or five times a day, so that it is kept collapsed. At the same time a mild astringent and antiseptic lotion, such as one containing zinc sulphate gr. i. ad ℥i. in a saturated solution of boric acid, should be prescribed for use night and morning. Under this treatment it will often be found that fluid passes into the nose at the fourth or fifth syringing, in which case the syringing is continued at longer and longer intervals until there is no regurgitation on pressure over the sac. In obstinate cases it is a good plan to inject argyrol 10 per cent. gently into the sac and leave it there, but if this is done one must be certain that there is no abrasion of the lining of the passages, since permanent staining of the tissues has been known to result.

If syringing does not bring about a cure the effect of probing the nasal duct may be tried before operation is advised. The passage of the probe does not require an anæsthetic if a solution of 2 per cent. novocaine is injected into the sac beforehand. Cocainising the conjunctiva is not sufficient. The probe is passed along the canaliculus until the inner wall of the sac is felt and the point is then turned downwards so as to engage in the upper end of the nasal duct, when it is pushed steadily downwards. Each probe is left in position a few minutes, then withdrawn and a larger size passed. Only the smaller sizes can be passed without slitting the canaliculus, as the punctum is the least distensible portion of the tract. Care must be taken not to probe if the sac and duct are very inflamed as there is risk that the damage done may only convert a stricture due to swelling of the mucous membrane into a fibrous cicatricial stricture, which will be much more difficult to dilate. Formerly, when syringing and probing had failed, recourse was had to the passage of lead or silver styles which distended the nasal duct and were worn for weeks or even months at a time. This form of treatment is seldom used now, as results attained with it were no better than with other methods, and the style, acting as an irritant foreign body, helped to keep up the discharge and in time led to still more fibrosis around the duct.

If after a fair trial of syringing and probing there is no improvement one must consider the question of operation. The operation, which will certainly remove at once the unpleasant purulent regurgitation and the grave risk of an infection of the cornea, is excision of the lacrymal sac. This is a simple operation and can be performed under a local anæsthetic (novocaine and adrenalin); indeed, it is better so performed as the bleeding can be much more efficiently controlled. If the sac is completely removed healing is by first intention, and the little scar, which follows the direction of the skin folds, is hardly noticeable. The operation has the one disadvantage, however, that it abolishes drainage into the nose and therefore the epiphora is still likely to be trying in windy weather, though it becomes very much less owing to the removal of the infected and irritating discharge. It was this anatomical imperfection of the operation which led surgeons, such as Toti and later West, to devise a means of establishing permanent drainage by chiselling away the bone of the inner wall of the lacrymal sac and establishing a direct communication with the nose here. There are now various operations planned with this end in view. In West's operation the removal of bone is done via the nose and there is no external scar at all, the new passage being kept patent by means of a silver wire passed from the slit canaliculus through to the nose and out at the nostril. This is worn till healing is complete, usually ten days. In the earlier operations the bone was approached through an external incision. In successful cases the results of these operations are very good, a perfect functional return to normal being attained, but they all have the disadvantages that they require a general anæsthetic, the patient is incapacitated from work for a longer period, and in a certain percentage of cases the new passage becomes occluded by fibrous tissue and prolonged dilatation or further operation is necessary.

In some cases, as when acute glaucoma arises in an eye already the subject of chronic dacryocystitis, the closing of the sac becomes an operation of urgency. In these cases the quickest procedure is ligature or cauterisation of the canaliculi, the next best excision of the sac. On no account must any intra-ocular operation be performed in the presence of regurgitation from the lacrymal sac, as there is a grave risk of panophthalmitis and loss of the eye. In a certain number of cases of lacrymal obstruction an acute dacryocystitis arises, for which the patient seeks relief. In the early stages, before the abscess is actually pointing through the skin, every effort should be made to secure resolution with discharge of the pus through the canaliculi. The punctum should be dilated, gentle pressure applied over the sac, and hot fomentations and hot bathings persevered with. In many cases incision or spontaneous discharge of the abscess through the skin may be avoided.

If the abscess is pointing it should be opened at the most fluctuant part, the pus evacuated, and the cavity packed with gauze so as to promote healing from the bottom. In most cases the severity of the inflammation has destroyed the lining membrane of the sac so that the cure is permanent by its obliteration. If some mucous membrane remains a permanent fistula results; it is then best to split up the little sinus and thoroughly curette the cavity, or, if large, dissect out its walls.

Infants with Congenital Obstruction.

In the second group of cases, those occurring in infants, the complaint may be of watering and discharge from the eye or of an acute dacryocystitis coming on soon after birth. One should first try the effect of teaching the mother to empty the sac by pressure and instructing her to do this very frequently so that there is never any large collection distending the sac, at the same time keeping the conjunctiva clean with irrigations of boric lotion. If there is no improvement in the condition after three weeks a general anæsthetic should be given and a probe passed once *without slitting the canaliculus.* This in most cases will remove the epithelial débris blocking the duct and re-establish the natural channel. The operation can be repeated if necessary after three weeks' further treatment.

If an acute dacryocystitis has supervened an attempt should be made to dilate the punctum and express the pus. Otherwise the abscess must be opened and dealt with as described above in adults. If rubber tissue is used for drainage the piece must be large, as small pieces have been known to slip into the cavity and remain undetected for weeks, preventing healing. Ribbon gauze is better for the purpose, but it must be thoroughly wetted with lotion or the dressing will be painful. In some cases a fistula remains and on probing this bare bone can be felt. This always arouses a suspicion of syphilitic or tuberculous disease of the nose and calls for careful investigation and appropriate treatment.

Blockage Proximal to the Sac.

In the rare cases where the blockage is proximal to the sac treatment varies with the condition.

(*a*) If the punctum is apparently absent careful search should be made with a good light and a corneal loupe when a small depression can nearly always be found. This can then be dilated, using a needle at first if necessary. In most cases with care a passage can be found into the canaliculus.

(*b*) Sometimes the punctum opens on to the outer surface of the lid margin and so does not lie in apposition to the globe. This may be remedied by slitting the first part of the canaliculus, taking care to turn the blade of the Weber's knife directly backwards so as to cut the posterior wall, not the roof of the little passage.

(*c*) In senile ectropion a small V-shaped piece of tissue should be removed (either with knife or cautery) from the conjunctival aspect of the lid below the punctum so that the resulting cicatricial contraction will pull this up into position.

(*d*) In cases where the puncta have been obliterated by a burn or other injury, treatment is difficult, as it is almost impossible to reconstruct the anatomy of the part. The epiphora is not likely to be so trying in cases in this group, since the element of infection and consequent irritation is usually absent. If, however, there is great discomfort the removal of whole or part of the lacrymal gland will afford relief. There is no danger of producing excessive dryness of the eye by this procedure, as Krause's glands and the mucous glands of the conjunctiva produce quite sufficient moisture. Usually the palpebral portion only is removed, since this involves so much interference with the ducts from the orbital portion that this latter subsequently atrophies.

(*e*) If a concretion or foreign body (usually an eyelash) is blocking the punctum, this can be removed by syringing or picked out with fine forceps after incising the canaliculus.

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Special Articles.

A DEATH-RATE FOR MERCHANT SEAMEN.

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THE deaths of merchant seamen in 1922 are stated in the Board of Trade's "Return of Shipping Casualties to and Deaths on Vessels Registered in the United Kingdom"[1] for that year. The returns for past years have been sharply criticised, yet there is little change in this now before us. The deaths are grouped according as they occurred among British, foreign, or lascar seamen, but there is no indication of the number of men in any of these groups, while the aggregate stated for the total employed is not claimed in the return to do more than "furnish an approximate basis for estimating the variation in the risks" from year to year. Further, in this return, as in its predecessors, tubercle and cancer are classed as Constitutional Diseases, and beri-beri as a Specific Fever. Why the Registrar-General's classification of 1922 was not adopted, grouping tuberculosis with the "Epidemic, Endemic, and Infectious Diseases," and beri-beri with the other general diseases, like cancer and scurvy, does not appear. The numbers of British, foreign and lascar seamen, making up the total of the "first crews" of ships, were kindly provided by the Board of Trade, but it remains a mystery why these figures should not be printed in the return and approximate death-rates added for "estimating the variation" in health occurring from year to year. If the Board of Trade pays any attention at all to these figures of deaths, it must have some sort of death-rates prepared for office use. The separated figures for 1922 were: British, 160,913; foreign, 11,563; lascars, 55,260; total, 236,772. Having these, it is possible to give an estimate of the death-rates for each class of seamen. Another curious feature in the return for 1922 is the alteration of the totals given in the last return for "first crews" in 1920 and 1921, from 278,593 and 274,216 to 245,168 and 242,110, without comment; possibly the men in fishing vessels are now omitted; but surely if this change has been made, it should have been so stated. The classified totals of deaths, with death-rates as estimated, are here given (see Table).

That there are two statements of death-rates will be noted with surprise. The first is calculated by the help of the "first crew" figures, with far too many men, 236,772, shown. This death-rate is consequently too low. The second has been based on the census of seamen in British ships on June 19th, 1921, and

DEATHS IN THE MERCHANT MARINE IN 1922.

—	Numbers of deaths.			Calculated on "first crews" per 1000.			Calculated on census figures per 1000.			Royal Navy 1921 per 1000.
	British.	Foreign.	Lascar.	British.	Foreign.	Lascar.	British.	Foreign.	Lascar.	
Figures of "first crews" ..	160,913	11,563	55,260							
Census figures	96,025	11,645	44,241							
Cholera	3	—	2	0·015	—	0·04	0·03	—	0·05	—
Dysentery.	7	1	11	0·04	0·09	0·20	0·07	0·09	—	0·01
Enteric	19	2	4	0·11	0·17	0·07	0·20	0·16	0·09	0·09
Influenza..	10	—	1	0·06	—	0·02	0·11	—	0·02	0·02
Malaria	28	1	6	0·16	0·09	0·11	0·27	0·09	0·14	0·06
Plague	1	—	5	0·005	—	0·09	0·01	—	0·11	—
Pneumonia	41	5	42	0·25	0·44	0·76	0·43	0·42	0·95	0·31
Small-pox	3	—	3	0·02	—	0·05	0·03	—	0·07	—
Tuberculosis (all)	46	7	44	0·28	0·61	0·79	0·48	0·60	0·99	0·28
Venereal disease	—	—	—	—	—	—	—	—	—	—
Other, due to infection.. ..	20	—	4	0·12	—	0·07	0·21	—	0·09	0·16
Beri-beri..	—	—	5	—	—	0·09	—	—	0·11	—
Cancer	5	—	1	0·03	—	0·02	0·05	—	0·02	—
Other constitutional	7	1	—	0·04	0·09	—	0·07	—	—	—
Diseases of the—										
Nervous system	34	1	7	0·20	0·09	0·13	0·35	0·09	0·16	0·16
Circulatory	57	7	23	0·34	0·61	0·41	0·59	0·60	0·52	0·14
Respiratory	15	1	18	0·09	0·09	0·32	0·16	0·09	0·41	0·06
Digestive	38	5	19	0·23	0·44	0·34	0·39	0·42	0·43	0·31
Urinary and generative ..	19	2	2	0·11	0·17	0·04	0·20	0·16	0·04	0·10
Other, ill-defined and unknown	23	5	22	0·14	0·44	0·40	0·24	0·42	0·50	0·25
Alcohol	37	7	—	0·22	0·61	—	0·38	0·60	—	0·05
Wounds in action	—	—	—	—	—	—	—	—	—	0·05
Heat-stroke	10	1	5	0·06	0·09	0·09	0·10	0·09	0·11	0·04
Homicide	5	1	2	0·03	0·09	0·04	0·05	0·09	0·05	—
Suicide	30	3	20	0·18	0·26	0·36	0·31	0·25	0·45	0·18
Casualties to ships	224	16	127	1·34	1·40	2·20	2·33	1·38	2·87	1·24
Accidents on board	151	10	58	0·91	0·87	1·05	1·57	0·86	1·31	
" ashore	115	6	2	0·69	0·52	0·04	1·20	0·52	0·05	
Total	946	82	433	5·87	7·17	7·84	9·83	7·06	9·78	3·51
Alcohol	37	7	—	0·22	0·61	—	0·38	0·60	—	0·05
Diseases	374	38	219	2·24	3·33	3·95	3·89	3·27	4·95	2·00
Accidents	535	37	214	3·21	3·23	3·89	5·56	3·19	4·84	1·46

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[1] H.M. Stationery Office. 1924. 3s.

has been worked out since the leading article in THE LANCET of March 14th last drew attention to that report. It shows a total of 151,911, and the death-rates worked out thereon are much higher. The "first crew" figures show the first crews of all ships that went to sea in that year, but gives no indication of the period during which they were in service; if one ship is withdrawn and replaced by another, with the old crew simply transferred, these men are counted twice, and so on. The census figure tells how many men, on June 19th, 1921, were employed on British ships all over the world, and obviously should give a better idea of the average number of seamen employed daily throughout the year. Unluckily the census was taken, as the report states, "in a period of acute depression in shipping, accentuated by the coal dispute." So its aggregate is *probably too low. Further, it may be urged that* its figures do not apply to 1922, when the deaths in the table occurred. That also is true, but "nihil est ab omni parte beatum," and no better method seems available for estimating the death-rate of merchant seamen. Possibly the true rate is a mean.

There were in 1922 some 100,000 British seamen. Of these, 5 were murdered, 30 committed suicide, 37 were lost through drink, 224 by casualties to their ships (founderings, collisions, missing, &c.), 260 by accidents aboard or on shore, and 374 by diseases, of which the most important were tubercle 46, pneumonia 41, and enteric 19. Of the next most numerous group, lascars, there were some 50,000. Of these, 2 were murdered, 20 committed suicide, none died through drink, 127 were lost by casualties to their ships, 60 were killed by accidents, nearly all on board their ships, and 219 by diseases, with tubercle 44 and pneumonia 42, as the most notable. Foreign seamen, about 12,000, had the highest death-rates from alcohol, from digestive and from circulatory diseases. Lascars had the heaviest rate for suicide, and an enormous excess (double) over British seamen from tubercle and pneumonia, which would appear connected with the lesser statutory cubic space, 72 cubic feet, prescribed for them in ships, as compared with the 120 cubic feet the British or foreign seaman must have. In sailing ships in 1922 there were no deaths from disease, but the fatal accidents were three times as many as in steam, and the total deaths 50 per cent. higher.

The Health Return of the Navy for 1922 is not yet available, but if the death-rates of 1921 may be taken as a guide, the British seamen of the merchant service appear to have a mortality over 50 per cent. higher from disease, and three or four times higher from accidents than are those of their seafaring brethren of the Royal Navy; but we do not know how far the ages of the men in both services are similar, so these figures are not strictly comparable.

As it is obvious that the death-rates of the Mercantile Marine are not exactly known, but are probably very high, *I hope it will appear to everyone* that it is time some thorough official study of the deaths of seamen should be undertaken, that accurate and informing statistics should be prepared by a Government department to show what the death-rates from diseases and accidents are, and that some planned endeavour to reduce the present excessive rates should be initiated. Of this there is hope, for the Prime Minister has stated that the Mercantile Marine Branch of the Board of Trade is in this matter in close touch with the Ministry of Health. There is in the return before us no evidence of such close touch (it was issued in 1924), so for what may come out of this cooperation we may perhaps do well to thank Mr. B. Smith, M.P. for Bermondsey (Rotherhithe), whose question produced that hopeful answer in the House. It will probably be expedient for the National Union of Sailors and Firemen to watch carefully the outcome, for there is no other body whose members are so vitally interested.

PROCEEDINGS OF THE ROYAL COMMISSION ON NATIONAL HEALTH INSURANCE.*

(Continued from p. 773.)

EVIDENCE OF THE INDEPENDENT ORDER OF RECHABITES.

(App. VIII.) The Independent Order of Rechabites is a Registered Friendly Society established in 1835. Membership of the Society is open to both sexes subject to the condition that all members must be abstainers from intoxicants. Evidence was given by Mr. Joseph Cave, the High Chief Ruler, and Mr. J. P. Illingworth, a Director of the Order. These witnesses gave evidence similar to that of previous witnesses (Manchester Unity and Foresters) on the following points:—

(1) That administration through branches (in this Order called Tents) was the most satisfactory and most democratic method.

(2) That sickness and disablement benefits should not be increased, it being desirable that all extra provision (Q. 6107) should be made through voluntary agencies.

(3) That women on marriage should be given the ordinary free year of insurance.

(4) That deposit contributors should be distributed amongst Approved Societies. (They stipulated, however, that members allocated to their society should comply with their conditions of membership.)

(5) That pooling of surpluses in general was undesirable except possibly amongst branches of the same society.

Dental and Convalescent Treatment.

(App. VIII., 33.) Dental treatment was urged as desirable, but the witnesses hesitated with the present rate of contribution to suggest that it should be made a normal benefit under the Act. With dental treatment they coupled convalescent treatment and also optical treatment as "additional benefits" which should be administered as such by Approved Societies until some comprehensive scheme of National Medical Service is practicable.

Consultant and Specialist Services.

(Q. 6362.) First in order of precedence for new services this society place consultant and specialist services, and not dental treatment as previous witnesses had done. *It was proposed that some portion* of the contribution should be set aside for these additional services, which they considered that all insured persons entitled to the ordinary medical service should enjoy.

The Panel Service.

As to this, this society's evidence was:—

(App. VIII., 25.) It can almost unreservedly be said that our relations with the medical profession have been most cordial, and recorded cases of complaint have been very few indeed. Occasional cases of difference have been found to be due to misunderstanding either by the member or the doctor, and have been generally satisfactorily settled.

The witnesses made reservations with regard to medical certification, stating that difficulty was experienced in getting certificates in cases where a doctor's recommendation—e.g., for dental benefit—was desired. The witnesses appeared (Q. 6390–7) to suggest that a doctor was under an obligation to give a written recommendation for dental or other extra treatment, even though the insured person was not incapacitated. It was pointed out to the witness in a series of questions that the doctor's obligation† was merely to add a recommendation to a certificate of incapacity.

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* In previous articles the proceedings of the Commission were reported under the following headings: Introductory Note: The Scope of the Insurance Scheme (see THE LANCET, Jan. 31st, pp. 247–8); The Provision of Medical Benefit (Feb 7th, pp. 301–3; Feb. 14th, pp. 355–6; Feb. 21st, pp. 403–5); Financial Provisions of the Act (Feb. 28th, pp. 451–7); Medical Certification and the Regional Medical Staff (March 7th, pp. 505–9); The Approved Societies and the Money Benefits (March 14th, pp. 561–5; March 21st, pp. 623–4); Evidence of the Hearts of Oak Society (March 28th, pp. 677–9); Evidence of the National Conference of Industrial Assurance Approved Societies and of the Manchester Unity Approved Society (April 4th, pp. 731–3).

References to the official statement which has been issued as an appendix in four sections are given thus; Section A, para. 69, is shown as "App. A. 69," and references to the oral evidence thus—Q. 1365.

Why the Contributions for Women are Less.

With regard to the recommendation (App. VIII., 2) that the women should pay the same weekly contribution as men, Sir Alfred Watson pointed out, in the form of a question, that :—

> (Q. 6126.) In the case of men the contract is practically one for the whole of life up to the age of 70, with heavy claims after 60, while in the case of women the contract terminates in the vast majority of cases at or a short time after marriage, with no old age liability.

Medical Institutes.

The society proposed that medical benefit should be given by medical institutes on the same terms and conditions as by panel doctors, and that the present embargo should be removed to permit the setting up of new medical institutes where such are desired and where circumstances appear to warrant such action.

With regard to this recommendation Sir John Anderson sought by a series of searching questions to discover what advantage would accrue to insured persons if this recommendation was accepted. He elicited from the witnesses that the medical institute was a system devised by friendly societies before there was any general medical service for insured persons, and that the doctors in many cases were salaried officials and he suggested that the insured person would, in effect, be deprived of free choice of doctor.

> (Q. 6338.) There is a normal system which is treatment through what is called panel doctors. If you want to provide something different, some exception from the normal system that exception surely must be justified on its merits . . . I want to see some advantage from the point of view of the insured person. It is obvious, is it not, that when the National Insurance Act was passed the provision which it contained with regard to existing institutes was inserted to prevent injury to institutions already in existence; but there was a very clear indication that no more of these institutes were to be recognised for the purpose of providing benefit under the Act. Now you suggest that barrier should be removed. I want to know what are the grounds from the point of view of the insured person for advocating that course. Are there any ?—The only grounds are that it was a system recognised at the inception of the Act, and if it was good enough to be recognised then it is good enough to be continued. (Q. 6345–6.) Does not the existence of an institute of the kind you are referring to imply some kind of lay control over the work of the doctor ?—I do not think so, in the institutes that are in existence at the present time.
>
> Q. There is nothing whatever to prevent the doctors from coming together in partnerships or in clinics or in any sort of way they like for the purpose of securing professional coöperation in carrying out their work. The essence of an institute is that there is lay control . . . Is that not so ?—It may be in certain cases, but that does not apply to all medical institutes.

It appeared from later answers that the recommendation was largely due to the unique system at Leicester, where members of an institute can go to any doctor on the panel and free choice of doctor is thus secured. It was also (Q. 6371) suggested that the accommodation at the institutes in Leicester was superior to the average run of general practitioners' consulting rooms, and that the institutes lent themselves to organisation amongst the doctors and to the obtaining of second opinions. The witnesses explained (Q. 6371) that they had no particular connexion with institutes, and said that (Q. 6342) on the whole it was not a matter that they greatly desired to press.

Medical Service for Dependants.

(App. VIII., 30.) The Rechabites consider this to be in the interests of public health, but—

> In view of the many difficulties which immediately present themselves when this question is considered, we make no further comments beyond expressing a general approval of the scheme prepared by the National Conference of Friendly Societies.

EVIDENCE OF THE RATIONAL ASSOCIATION FRIENDLY SOCIETY.

The witnesses in this case were Mr. Jonathan Duncan, the Secretary, and Mr. Bailey, Assistant Secretary. The Rational Association Friendly Society was established in 1837. It had a scheme of medical benefit prior to the National Health Insurance Act. It is a centralised society with branches. The branch secretaries are subject to the control of the central office, but have a considerable discretion allowed to them. The society is valued as a whole, each member being entitled to share equally in any surplus, but the men and women members are dealt with in separate compartments, with the result (Q. 6413) that the women get much less of the surplus than the men.

The evidence embraces recommendations similar to those made by other societies as to the limitation of cash benefits, and the free year's insurance to women on marriage, and emphasises the objection to pooling surpluses. The importance of providing dental treatment as a uniform statutory benefit is urged (with the suggestion that it should be 50 per cent. of the cost up to a maximum of £3 10s. in any one case), and it is recommended that Insurance Committees should continue their present work and (Q. 6617) should administer dental benefit.

Doctors as the Spending Department.

(App. IX., 35.) In regard to medical certification the experience of this society is that :

> A large number of medical men are either deceived by the detailed symptoms of the insured person or they do not diagnose cases correctly, and hence a number of persons are treated and take drugs for diseases from which they do not suffer.

As doctors are the "great spending department" errors on their part are costly and greater care in certification is urged.

> (Q. 6517.) Would you say that if National Health Insurance was pooled and administered with a common fund there would be any probability that the claims would be higher than they are at the present time ?—I could not say whether there would be any probability of that. It would depend on how it was administered and on the doctors. We are always in the hands of the doctors . . . They are the great spending power.

With regard to the rather general criticisms in the evidence of this society on the medical profession Sir Humphry Rolleston elicited that these were based on the published reports of the Ministry rather than on the society's own experience.

> (Q. 6620–5.) It must be obvious to you that at the commencement of a disease it is common to the whole medical profession not to be able to say in many cases what is going to be the result. It strikes me that perhaps the wording of this is not intended to express the reflection which might be read into it ?—All we can say is that in these cases people are certified as being incapable of work and as suffering from certain diseases. We also assume that they are taking drugs for those diseases, but they are certified as capable of work by the regional medical officer. They were not suffering from those diseases, so that it logically follows they have been taking drugs for diseases from which they did not suffer. Was there any possibility that they might have been cured of those diseases ?—There may have been. You do not introduce that alternative ?—No ; but sometimes we get a first diagnosis and then we get a different one later, which shows, of course, that the first diagnosis is not always correct.

The last answer prompted Sir Humphry Rolleston to remind the witness that it is a very common thing for a disease to change and for complications to occur.

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† The Regulation provides as follows : "(Rule 16 of the Medical Certification Rules : The practitioner shall, if so requested by the patient, include in the next medical certificate issued by him under these Rules a statement of any form of special medical or other treatment which he has advised the patient to obtain in any case in which he has been informed by the Approved Society of which the patient is a member that it is enabled under its scheme of additional benefits to defray the whole or a part of the cost of that treatment.)"

Free Choice of Doctor.

(App. IX., 31.) After reciting that this society is entirely opposed to any curtailment of the right of insured persons to a free choice of doctor or of facilities to lodge complaints, this evidence contains the curious statement that the society

> is opposed to any demarcation of streets into areas in any large centre for the purposes of medical benefit, as such an idea savours of pauperism.

(Q. 6677–80.) The witnesses had heard that "something like this was contemplated," which led Sir Alfred Watson to remark that dissent was being expressed from a proposition of the existence of which the Commission was unaware.

Medical Benefit in Old Age.

(App. IX., 26.) This society's evidence contains a recommendation, already made by other societies (but not hitherto included in our extracts), that:

> As many persons are discharged from employment at age 60 or 65 (thus *losing their right to medical benefit after* their free term has expired), who would otherwise have been entitled to medical benefit throughout life had they continued employment until 70 years of age, it is considered that such persons suffer hardship. It is, therefore, recommended that legislation should be promoted to enable such persons to pay up to the age of 70 an equivalent sum (to include cost of administration) to that paid by insured persons, and after age 70 to be entitled to free medical treatment.

EVIDENCE OF MINERS' SOCIETIES.

Scottish Miners' Federation Approved Society.

(App. X.) The principal evidence of this society was on the subject of the hazardous nature of the miners' calling, the heavy incidence of sickness, and the physical deterioration which causes heavy claims for prolonged disablement benefit.

After-effects of Accidents.

(App. X., 7.) With regard to accidents, claims arise under the National Health Insurance Acts in respect of subsequently recurring periods of disability. The burden of medical evidence points to the fact that the primary cause of these recurring periods of incapacity is either closely allied to the seat of injury or directly attributable to the original accident.

(App. X., 9.) On this question the following was quoted from lectures delivered by Mr. (now Sir) Alfred Watson in 1911–12:—

> The average weeks of sick pay of colliers were 1·62 per member per annum taking all ages, while the average weeks of sick pay of all other classes were 1·20. . . . The colliers had a great amount of sickness liability due to compensated accident cases . . . The purely sickness experience showed an excess in the case of the miner of about 35 per cent. whilst his industrial accident liability was about six times the average of the other classes. . . . There is more sickness proper among the heavier risk occupations than among the normal grades, and this illustrates the fallacy [of the statement] . . . that if the industrial accident liability is eliminated everybody is brought to the normal condition, justifying equality of financial treatment.

Prolonged Absences.

(App. X., 5.) One suggested cause of heavier sickness claims was that—

> the miner, owing to the strenuous nature of his life, is inevitably compelled to relinquish his work at the onset of the disease and does not resume until he feels thoroughly well equipped to undertake the arduous task of coal-getting,

whereas persons in less exacting occupations can resume work at a stage of recovery which may not represent normal fitness.

Derelicts.

(App. X., 6.) The industry is productive of a considerable number of derelicts; when physical deterioration has set in they rapidly become a permanent charge on the funds of the society.

Objection to Segregation.

(App. X., 11.) The witnesses objected to the present system of segregation of societies, each separately valued, some enjoying their own surpluses while others—e.g., purely miners' societies—had none. A flat rate of contribution should, they considered, produce a universally flat rate of benefit. (16.) The most effective arrangement would be to reorganise the scheme on a territorial basis.

Miners who Join other Societies.

(Q. 6837–40.) The witness represented the only miners' society in Scotland. There are 46,000 miners in the society and a larger number than that spread over other societies in Scotland. It results that some miners are working side by side with others who, when sick, receive more favourable sickness payment.

> Q. That is all because the other societies have chosen to admit the miner, is it not?—Yes.—Q. They are not bound to take him, nor were the 46,000 in your society compelled to go to you. They could have gone to these other societies if they had chosen?—Yes.

This led a member of the Commission to suggest that there did not seem to be any grounds for a grievance.

(Q. 6914.) It appeared from later questions that what was objected to was the existence of two types of society and that the witness could not object to a system in which each society represented a fair sample of the population.

Pithead Baths.

(Q. 6756–7.) The witness agreed that pithead baths would be a great advantage, but said frankly that the difficulty was to get the men to take the same point of view. Opposition had been offered both by the employers and the men. It was clear that the severe changes of atmosphere, the heat below ground, and the walk home, often in damp clothes, were potent causes of sickness. The pithead bath-houses, to be effective, should contain drying stores for changes of clothes for men coming on or leaving off work.

Double Refereeing.

(Q. 6690–1, 6707.) The society have their own referees and are not prepared to abandon these arrangements. Some of their members appeal against the regional medical officer's decisions and the society allow this. The suggestion which had been made that in the event of a dispute the regional medical officer's opinion should be final was one which they were not prepared to accept.

(Q. 6692.) As to certification generally, the witness did not wish to make sweeping charges, but felt confident that there was a proportion of careless doctors.

> I expect that that proportion will continue for all time. Doctors seem to me to be just like ordinary humanity. Some are only professionally intelligent, and are hopeless in other respects. That is our experience, but it applies only to a very limited number.

SCOTLAND.

(FROM OUR OWN CORRESPONDENTS.)

The Eighty-Fourth Session of the Edinburgh Obstetrical Society.

THE winter meetings of the society for 1924-25 evoked a number of instructive and scientific papers. The session was opened by the President, Prof. B. P. Watson, who delivered an illuminating presidential address *on the teaching of obstetrics, in which* the method of instruction in Edinburgh was stated, and various points taken to show how that instruction might be improved with accruing benefit to both patient and student. The ideal method of training would be hard to attain, but should always be kept in mind as the acme to be reached. In January Prof. Louise McIlroy (London), Prof. R. G. McKerron (Aberdeen), and Prof. Munro Kerr (Glasgow), as guests of the society, took part in a discussion on the treatment of placenta prævia, the subject being introduced by an analysis of the treatment of 251 cases at the Royal Maternity Hospital, Edinburgh, the cases having been collected by the President and Dr. Douglas Miller. The other papers read during the session included both obstetrical and gynæcological subjects, and were both practical and scientific in character. Prof. Ranken Lyle (Newcastle) read a very interesting paper on neurasthenia in relation to chronic pelvic pain, which provoked much discussion. Mr. D. M. Grey gave a communication, abundantly illustrated by numerous lantern slides, casts, and skulls, on plagiocephaly, and asked if it might ever be a birth deformity. No satisfactory answer to the question was elicited either in the affirmative or negative. At one meeting two papers were read on puerperal sepsis, Miss Jessie Eeles treating the subject from the scientific aspect and discussing the pathology of the disease in full; Dr. W. A. Dafoe gave an account of an epidemic of puerperal sepsis due to the *Streptococcus hæmolyticus* in Toronto, and the means taken to prevent further infection. Dr. Douglas Miller described in full, with lantern illustrations, two cases of Krukenburg tumour of the ovary, which had come under his notice, and Dr. Chassar Moir gave an account of investigations pursued by him on the question of the clinical activity of dextro- and lævo-rotatory hyoscine in twilight sleep.

Proposed Memorial to the late Dr. C. B. Ker.

A subscription list has been opened to provide a memorial to the late Dr. C. B. Ker, of the City Hospital, Edinburgh, and as far as possible all past and present members of the medical and nursing staff of the hospital have been circularised and invited to contribute. The appeal is being issued in the names of Dr. Alexander James, the consulting physician to the hospital, Dr. W. Robertson, the medical officer of health of the city, Miss Thomas, the matron of the hospital, and Dr. A. Joe, the senior assistant. It is proposed that the memorial should take the shape of a monument at Dr. Ker's grave at Morningside Cemetery and, if funds permit, the erection of a plaque in the hospital. There are doubtless many old City Hospital residents, both in this country and abroad, desirous of contributing whose addresses are not known, and all such are invited to send donations to Mr. Macdonald, Steward, City Hospital, Edinburgh.

Royal Aberdeen Hospital for Sick Children.

The directors of this hospital have decided to proceed at an early date with the erection of a new hospital. An excellent site has been obtained at Forresterhill, forming part of the ground on which it is hoped to concentrate the hospitals of the city according to the "joint hospital scheme" at present under consideration. Plans have been finally approved for a new children's hospital of 132 beds, with out-patient and other special departments. While every consideration has been given to economy, it has been found that in order to get a really good and well-equipped hospital in which the treatment of the diseases of children can be carried out according to modern standards of efficiency, it will be necessary, at the present high cost of building, to face an expenditure of not less than £110,000. Funds already collected and promised amount approximately to £65,000, and the directors are now issuing an appeal for the remaining £45,000. At a meeting of the honorary staff of the hospital it was resolved that a special appeal be made to all members of the staff, to old residents, and to any graduates of the University of Aberdeen who may care to contribute. It is confidently hoped that a sum sufficient for the construction or for the equipment of some special part of the hospital may be collected. The deplorable condition of the present hospital is so well known to graduates, and particularly to old residents, that it is not necessary to enlarge on it here, but it may be emphasised that the age and general unsuitability of the present building hamper not only the efficient treatment of patients, but the adequate instruction of medical students and nurses. The provision of a new hospital will, therefore, benefit not only the community, but also the Medical School in Aberdeen. Contributions marked "Staff Fund" may be sent to Miss Hill, lady superintendent of the hospital, who has kindly promised to acknowledge their receipt.

MEDICINE AND THE LAW.

MEDICAL MEN AS CORONERS.

IT appears that in some districts there is a tendency to return to the practice, at one time universal, of appointing barristers or solicitors as coroners instead of the medical men who more recently and more wisely have been selected. Indeed, THE LANCET is informed that at least one local association of lawyers has approached the electing body of its district with a view to furthering that end. Most of such disinterested persons as hold the view that a lawyer ought to make a better coroner than a doctor are more familiar with the reports of inquests in the newspapers, the majority of which relate to sensational cases of homicide or suicide, than they are with the more everyday duties of a coroner's life, with the inquests where there may be little to report, but where it is important to determine the precise cause of a death, and with the circumstances in which the coroner has to decide in a case where no medical man has recently attended the deceased, whether there has been a death which ought to be explained by evidence in open court. To advocate the desirability in the public interest of appointing as coroners medical men of experience has been the policy of THE LANCET ever since its foundation, always with the admission that a double training in medicine and in law may render a coroner more efficient than one who has been trained in medicine alone. If, however, we repeat some of the arguments in favour of medical coroners, we shall do so most forcibly by asserting, and by challenging contradiction in doing so, that to fit a man for the performance of a coroner's duties no portion, or scarcely any, of his training to be a general practitioner will have been irrelevant, or will fail to assist him at one time or another, whereas the amount of legal training that he needs is very small. He would profit, no doubt, by having acquired by practice some skill in examining witnesses in court, and in detecting their weaknesses or tendency to deceive the court. This would help him at a few inquests at first, but he would soon acquire it with practice. As a rule, however, a coroner deals with very simple witnesses who have no desire to deceive him. Where they give evidence as to the manner in which a death has taken place, his appreciation of their statements as a medical man familiar with death and its causes will be invaluable and indeed indispensable. It must be remembered that he has to deal with other witnesses as well as with medical men in tracing the cause of death. As to knowledge of law, the training an intending coroner would undergo as a student seeking a call to the Bar would include the study of Roman Law, equity and conveyancing, the law of torts and of contracts, criminal law, and the law of evidence. None of the first named could in any way, except perhaps as mental training, be of use to him as a coroner. With the criminal law he has no need to be familiar except with that limited portion of it that relates to murder and manslaughter, and in any case of alleged murder or manslaughter the strict application and enforcement of the law is ultimately the function of magistrates and judges, not of the coroner. A general knowledge of the law of evidence in criminal cases should, of course, be possessed by every coroner, but it must be realised that he is not bound to apply it strictly. He conducts an inquiry, not the trial of a prisoner, even though a person may have been arrested in connexion with the death which is the subject of the inquest that he is holding. He does not have to apply the rules of evidence as they would affect such a person if he were before magistrates or a court of assize. Reference has been made to a coroner's duties with regard to lay witnesses, but his most important guide in all cases will be the testimony of medical men, and he may have to discriminate between conflicting medical witnesses. It may, in short, be said that nothing or little that he will have learnt as a doctor will have been superfluous, and that the knowledge of the law that he will find necessary can be acquired by him with a little application, and by using his trained intelligence with a few months' or even with a few weeks' study. The importance of medical training for a coroner, who has to decide whether an inquest is necessary, and who, until he has so decided cannot order a post-mortem examination to be held, has been referred to above and cannot be stressed too strongly. In deciding to hold an inquest he has often to meet the opposition of relatives and of others who, for various, but not necessarily guilty, motives, will desire that no public inquiry should be held, and he has to avoid two opposite and distinct errors, that of holding an inquest unnecessarily, and, on the other hand, that of not holding one, which in the public interest, and perhaps in the interests of law and justice, ought to take place without delay.

EXPERIMENTAL RICKETS.

CEREALS *have long formed the major part of the* diet of man. From a physiological standpoint they have been considered almost entirely as a source of energy, of carbohydrate, and of protein, and it is on this basis that their dietetic value has been appraised. Apart from differences in vitamin content there has hitherto been no reason to suppose that there are important differences in food value amongst the natural cereals, except such as can be explained in terms of their physiological constitutents.

Prof. Edward Mellanby, in a green book just published under the auspices of the Medical Research Council,[1] describes experimental work which demonstrates that various common cereals have different effects on the growing puppy and that these differences cannot yet be explained on the basis of their known constituents. The report deals with the special subject of the interaction of food factors on the growth and hardening of bone.

The deposition of calcium phosphate in growing bone is not, according to Prof. Mellanby, influenced greatly by the amounts of calcium and phosphorus in the diet, but mainly by the presence in the diet, among other factors, of a calcifying vitamin, the anti-rachitic vitamin. Another important food constituent influencing bone calcification, but in an opposite sense to this vitamin, is found in cereals. When the diet is deficient in anti-rachitic vitamin, increasing the amount of cereal brings about worse-formed bones if other factors of diet and environment remain constant, and qualitative differences among the effects of various cereals have been made out. Oatmeal, which contains more calcium and more phosphorus than the other cereals tested, has yet by far the worst influence on bone formation, and then maize and barley, rice, and wheaten flour in that order. The germ of wheaten flour, when added to the diet in sufficient quantities, also interferes with bone calcification. The detrimental effect of cereals on the formation of bone is antagonised by cod-liver oil, even in small quantities, by whole milk in fairly large quantities; butter is of comparatively small value unless accompanied by a fairly high calcium intake. The exposure of the animal eating the cereal being tested to ultra-violet radiations, or even the exposure of the cereal itself to the same radiations, also antagonises the rickets-producing action.

The methods whereby cereals produce this detrimental effect on bone formation has been studied, though no conclusive results have yet been obtained. In one cereal tested (oatmeal) there has been found a chemical grouping which, after digestion and absorption of the grain, is capable of interfering with bone calcification. This substance is thought to be associated with the fatty acids. It can be obtained by saponification of oatmeal with soda and extracting the acidified mixture with petrol ether.

From the results of these investigations it is deduced that the amount of calcium and phosphorus in food is of but secondary importance in the control of the deposition of these elements in growing bone, although, of course, there must be a sufficiency of the salts for the formation of perfect bones. In view of the evidence of interaction and balance among food constituents provided, it is held that the value of the expression "optimum calcium content of a diet," commonly used in dietetic discussions, must be doubted, since the optimum varies every time the other elements of the diet are changed.

Practical Points.

One or two practical points arising out of the experimental results are discussed, assuming that these results may be applied to man. For example, the challenge that fine races of men have been reared on diets of which oatmeal forms a large part has to be met. Prof. Mellanby suggests that probably the diet of such races also included much food rich in anti-rachitic vitamin, such as milk, eggs, and fish of the fatty variety, including herring, salmon, mackerel, &c. In tropical countries, where cereals such as rice, maize, millet form a large part of the diet, the sunlight may be an important factor in antagonising their detrimental influence. Experimentally, perfect bone formation can be obtained in puppies, even when large quantities of oatmeal are eaten, if the rest of the diet be adequate. In this country, where the average diet is either deficient in or contains a border-line quantity of anti-rachitic vitamin and calcium, and where sunshine is negligible, the ingestion of oatmeal during pregnancy and lactation of women and in growing children is considered by Prof. Mellanby as probably harmful.

Another point of practical dietetics centres round the controversy of wholemeal bread. Prof. Mellanby holds that from the point of view of rickets and its allied problems the question of whole-meal versus white bread is probably of little practical importance.

MENTAL HOSPITAL REPORTS.

IN recent years much has been done by those who have charge of mental patients to ameliorate the conditions under which they are obliged to live, and a survey of mental hospital reports reveals the tendency of public authorities, in all parts of the world, to adapt circumstances in accord with the modern attitude. *It is gratifying to see how much* attention is being devoted to the extension of the possibility of voluntary treatment, as it is by progress along this line that the old fears and misgivings of the public will best be removed.

Vol. II. of the annual report of the London County Council on *Mental Hospitals and Mental Deficiency* reveals the fact that there are more than 18,000 persons under the care of the L.C.C. in mental institutions. This is a slight increase on the previous year, mainly due to parish patients. The average of admissions and of discharges as "recovered" remains fairly constant, 881 cases having been so discharged in the year under review. Attempts have been made to improve the footgear, clothing, and laundry of patients in these institutions, and to allow for individual variations in the trimming of frocks. Arrangements have been made for a greater variation in the dietary, with due attention to the caloric value of the food provided. The alterations in the laundry have cost £5000. Several interesting experiments have been initiated; at Claybury a trained masseuse has been appointed to see if the provision of regular massage is of advantage to the patients. The experimental appointment of an honorary lady visitor at Horton, to act as a liaison between inmates and the outside world and as a friend to friendless patients, has been so successful that similar appointments are being made at the other hospitals. For the mental defectives the occupation centres provided by voluntary bodies have been found helpful and the scouts and guides movement has proved a valuable aid to moral tone.

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[1] Experimental Rickets: The Effect of Cereals and Their Interaction with Other Factors of Diet and Environment in Producing Rickets. Special Report Series No. 93. H.M. Stationery Office. Pp. 60. 2s. 6d.

In *New South Wales* some (8000) insane persons were under official cognisance at the end of June, 1924. The institutions available appear to be overcrowded, particularly in the female and the criminal departments, with the regrettable result that certifiable cases have in some instances to remain in gaol. There is also insufficient accommodation for inebriates. A curious omission in the legislation dealing with this department of public health is the absence of any provision for dealing with mental defectives. The Lunacy Act, passed in 1898, has not yet been amended, although continuous representations have been made on the subject. New South Wales is concerned with the same problem as that which is exercising all legislatures since the modern developments of psychology have drawn attention to the need for competent treatment of mild and incipient cases. The proposed amendments provide for the early cases at general hospitals and for an intermediate class of patient to be admitted to a mental institution at his own request, to be detained there if it subsequently appears necessary in his own interest. Although voluntary boarders are found in all the mental hospitals, their position is not legalised. Some provision is made for the "borderline" case by two reception houses for slight and transient mental disturbances and for alcoholic cases, and by the psychiatric clinic at Broughton Hall. The former saved some 600 persons from the necessity of certification during the year. At the latter 132 uncertified patients can be accommodated, and the clinic works in harmony with the out-patient department of a hospital. The accommodation provided by these institutions is, however, quite inadequate for the needs of the community, and it is to be hoped that our brethren in New South Wales will be able to put through the proposed improvements in the law without further delay.

In his annual report for the year 1924, the physician-superintendent of the *Aberdeen Royal Asylum* draws attention to the need for making the voluntary boarder system more widely known among the public, as many cases of certification could thereby be avoided. There is also need for reform in the financial arrangements for rate-aided voluntary boarders; at present the parish councils only receive the lunacy grant if certification has taken place, so that poor persons are not encouraged to seek the early help provided by the voluntary system. One-quarter of the patients admitted during the year were suffering from depressive conditions, while dementia præcox and senile dementia followed next in relative incidence. The number of senile dements has increased very considerably in the last few years and it is difficult to find accommodation for the cases desiring admission. A noteworthy feature of the year's work was the performance of 13 major surgical operations. In the laboratory research on fractional test-meals and on blood-sugar is being conducted.

A similar increase in the number of senile cases is reported from Edinburgh by Prof. G. M. Robertson in the annual report of the *Royal Hospital at Morningside*. The nursing homes, established in connexion with the institution for patients suffering from early and curable forms of mental disorder, are still proving a most successful and necessary department of the work. The patients are received in these houses under the care of their own practitioner but are under the general supervision of the Board of Control; 40 per cent. of the patients entering the mental hospitals of Scotland do so as voluntary boarders and the percentage is steadily increasing. In Edinburgh the difficulty with regard to rate-aided voluntary patients has been met by joint action on the part of the parish council and the managers of the institution. The treatment of general paralysis by malaria is continuing to give satisfactory results; Prof. Robertson suggests that the therapeutic factor may be the rise of temperature and that the fall of 27 per cent. in the deaths from this disease, which began in 1919, might possibly be correlated with the epidemics of influenza with high temperature which occurred in that period. The pathology of pellagra is being investigated in the laboratory.

TUBERCULOSIS SOCIETY.

Provincial Meeting at Cambridge.

A provincial meeting of this Society was held at Cambridge from April 2nd to 4th, in the Pathological Lecture Theatre, lent by Prof. H. R. Dean.

On Thursday, the 2nd, Prof. W. E. Dixon gave a lecture on the

Treatment of Disease with Heavy Metals and Bactericidal Agents.

He pointed out that drugs were employed in tuberculosis for one of three purposes: To attack and prevent the growth of the tubercle bacillus or other organisms with which the disease might be associated; to neutralise toxins; or to remove or relieve symptoms. He had confined himself in his paper to a consideration of the first group. The ideal for which they were searching was for an internal antiseptic—i.e., for something which would prevent the growth of the tubercle bacillus without injury to the host. The antiseptic action of most of the ordinary antiseptics, such as phenol and the coal-tar derivatives, was greatly lessened by admixture with serum, and when injected into the animal body they destroyed the tissues before destroying the parasites. Any beneficial effect that coal-tar derivatives might have upon tuberculous patients was therefore not due to their direct influence upon the tubercle bacillus. Essential oils had also formed the basis of many so-called cures, but, like other specifics, they failed in the hands of the sceptical physician. Favourable results had been claimed for calcium therapy, but calcium deficiency was a well-known condition of many diseases, including tuberculosis, and the good results were probably obtained not by influencing the cause of the condition, but by limiting inflammatory exudation. Various compounds of arsenic had been tried with widely divergent opinions as to their value. Careful experiments with some of the more likely organic arsenic derivatives had, however, shown that they had no action on the pathogenicity of the tubercle bacilli, and no favourable influence on the disease. True chemo-therapeutic agents, on the other hand, had a specific selective action on certain tissues and bacteria which was probably physical rather than chemical, while their disinfectant action was increased rather than retarded by admixture with serum. Two groups of organic compounds were especially remarkable for their chemo-therapeutic action on bacteria: hydrocupreine, certain derivatives of which had an absolutely specific effect on the pneumococcus and diphtheria bacillus, and acridine, more especially its most recent derivative, rivanol, injections of which had been shown to cure streptococcic infections in mice. Unfortunately, the chemo-therapeutical substances which were known to act on bacteria were without value in tuberculosis, the destruction of the tubercle bacillus presenting the double difficulty of the fatty protective envelope surrounding it, and of the small blood-supply to the tuberculous lesion. Of the various metallic compounds for which success had been claimed three were especially noteworthy: cerium salts, copper salts, and gold. The first of these were used in France by a small section of workers, but in the speaker's opinion the evidence as to their value was not convincing. Copper compounds had had a tremendous vogue, but so far they had not proved of much use except in vitro. Egger had shown that the influence of copper upon tuberculous tissue was strictly local and that on account of the increased susceptibility of the vascular nervous system around tuberculous tissue the action of the copper was greater than in normal tissues. The gold compounds which had been used included aurocantan, a cantharadinate of gold which proved to be too toxic for use; krysolgan, a compound introduced by Feldt, the clinical effects of which were both hopeful and inspiring; and sanocrysin, the gold cure recently introduced by Moellgaard. Like its predecessors sanocrysin retarded the growth of tubercle bacilli in glycerinated bouillon in a strength of 1 in 1,000,000, but the speaker had not discovered how the action of this substance was affected by the addition of serum. Sanocrysin was now on its trial; the recorded experiments were suggestive, but certainly not conclusive, and clinical records of treated patients should be kept for years before the true value of a remedy for tuberculosis could be gauged.

At the same session Dr. J. E. A. Lynham, radiologist to Mount Vernon Hospital, read a paper on the

Use of X Rays in the Diagnosis of Pulmonary Tuberculosis.

He mentioned certain conditions as essential for satisfactory screening: the room had to be quite dark; the controls within easy reach; the fluorescent screen must be the best procurable and be protected with thick lead glass; the diaphragm must be rapid in action; and the operator must have waited sufficiently long in the dark room for the eyes to have become accommodated. A screen examination gave incomparably better information than a bad film. In radiograms the earliest evidence of tuberculosis in the lungs was found not at the apex, but in the outer part of the highest lobe, below the clavicle. In children the apices of the lower lobes might be first involved. The opacities seen were not dense shadows, but were faint steamy areas, usually arranged in a small group. An extremely small degree of movement was sufficient to obliterate them from the film or to cause them to be unrecognisable. Hence a single flash film was far superior to a time-exposed film of any kind. There was some difficulty in recognising early deposits in the deeper part of the lung. It had been said that a tubercle must be 1 mm. in diameter to cast a recognisable shadow, but the speaker was convinced that before the granulomatous nodules had reached anything like this size they must have caused localised disturbance of the vascular and lymph flow. Probably, therefore, in early cases at least, the shadows seen might be due not so much to actual tubercles as to minute congested vessels or to bronchioles and alveoli filled with exudation and débris; in other words, that the tuberculous element was less responsible for the shadows than the broncho-pneumonic. The speaker believed that the question of mediastinitis in children had never received the consideration it merited. He thought it probable that inflammatory attacks with swelling and some degree of inflammation short of actual suppuration might affect the hilus or mediastinal glands in the same way that the cervical glands were so often affected, and he suggested that this might give the clue to many of the obscure chest illnesses of childhood. On the controversial question of hilar tuberculosis, he said that although he believed cases might occur they were extremely rare. In the many cases he had seen with root areas involved the lung tissues were always involved as well. An imperfect film would show opacities at the roots which might erroneously be called hilar tuberculosis, and a very slight degree of movement in a case where both roots and lung were involved might cause obliteration of minute lung opacities, whilst the hilar shadows remained. He had recently made the observation that it was possible when screening to determine whether the root shadows were fluid or solid by screwing down the diaphragm to an area of 3 in. by 2 in. and getting the patient to breathe from full inspiration to full expiration and then back to full inspiration. Solid bodies, such as calcified glands, retained their shape; fibrotic areas showed up at full inspiration like the fine branches of a moving tree; caseated areas resembled crows' nests in tree branches; while fluid areas, such as the large veins, underwent a change of shape which was amœboid in type. There was one point connected with the lungs to which he had never seen a reference. This was the movement in the lungs associated with the alterations in the shape of the pulsating heart. It was greatest in the neighbourhood of the pericardium and about the aorta and pulmonary artery, but could be detected for a considerable distance in the lung. It was this movement he believed which was chiefly responsible for the blurring of the bronchial area shadows which were so common with a time exposure.

On the conclusion of his paper Dr. Lynham showed a large number of X ray films and slides illustrating the various points discussed.

The opening paper on Friday, the 3rd, was given by Dr. R. C. Matson, National Tuberculosis Association, America, whose subject was the

End-Results and Limitations of Artificial Pneumothorax,

and the rôle of other collapse procedures in the treatment of pulmonary tuberculosis. The speaker pointed out that, apart from social and environmental factors, the end-result depended, first, upon the type of disease; secondly, upon the character of the pneumothorax; and, thirdly, and least important, the condition of the opposite lung. The largest proportion of satisfactory collapse cases, as well as the best results in the entire series of over 800 cases, were obtained in the clinical Group I., suggesting that pneumothorax treatment should be instituted before the disease had progressed to the formation of cavities and at a time when adhesions were less likely to prevent a satisfactory collapse. Tables of comparative results obtained in each of five clinical groups where satisfactory collapse, partial collapse, and no collapse was effected, showed unmistakably the value of artificial pneumothorax in all stages of the disease. In no class of case was a satisfactory collapse so vital as in acute phthisis, a partial collapse here being of much less value than in any other form of the disease. Caseation was, in the speaker's opinion, not a contra-indication for pneumothorax, although in cases of progressive caseation, with grave toxæmia and a bad general condition the procedure was of doubtful value. Bilateral cavernous phthisis had always been considered a contra-indication for artificial pneumothorax, but by withholding the treatment until activity in the contralateral lung had largely subsided, and by gradually bringing about the collapse (consisting in many cases of only a thin layer of gas between the lung and the chest wall), a considerable degree of success was attained. Dr. Matson emphasised the paramount importance of obtaining a good collapse where this was possible. In many cases of partial collapse he was satisfied that pneumothorax should be abandoned and other operative collapse procedures instituted, thus giving a 10 or 50 per cent. chance of recovery instead of a less than 20 per cent. one, which was the best result that could be obtained from a partial collapse. His experiences had convinced him that the danger that disease in the contralateral lung would be reactivated by a pneumothorax on the opposite side was exaggerated, and that improvement in the contralateral lung was often coincident with and actually dependent upon improvement of the pneumothorax side. He deprecated the widespread impressions that pneumothorax treatment should be withheld until after a thorough trial of sanatorium methods, and that it should be undertaken with much forethought because of the danger of complications. Of 391 cases under pneumothorax treatment less than 2 per cent. had died as the result of complications directly or indirectly due to the treatment.

Of other operative collapse procedures only four were in general use: extrapleural thoracoplasty; phrenic resection or exairesis; intrapleural pneumolysis; and extrapleural pneumolysis with fills. In ho first of these the methods of Brauer and Sauerbruch had undergone so many modifications hat at present no great difference existed between hem. The speaker emphasised the great importance of removing the ribs close to the spine, since upon this depended largely the degree of collapse obtained. The operation, which was best done under local anæsthesia, should always, he thought, be performed in two stages, which greatly lessened the operative mortality. The patient's fate depended also largely upon the after-care given. The most important point in this connexion, where there was much sputum, was to give sufficient opiate to relieve the pain of coughing and then to encourage the patient to cough and drain the lungs of sputum about every four hours. The results of a good thoracoplasty in properly selected cases showed about the same percentage of recovery as a satisfactory pneumothorax, but the danger of complications in the former was very much greater, especially as regarded the dissemination or reactivation of disease in the opposite lung. Phrenicoexairesis gave only relative rest to the lung, and that only to the lower lobe; hence it was useless if the upper lobe alone were diseased. It was valuable chiefly in conjunction with other procedures, such as a pneumothorax or a thoracoplasty. The operation was not without danger and should be attempted by no one who had not a thorough knowledge of the topography of the parts. Extrapleural pneumolysis was probably of limited value, chiefly because there was no satisfactory substance to use as a fill. Its action, moreover, was purely local. Intrapleural pneumolysis with the burning of adhesions was sometimes of great value, especially with the new Unverricht thoracoscope which was a great improvement on the old Jacobaeus instrument.

Dr. Matson's paper was followed by an interesting discussion in which Mr. Morriston Davies and others took part.

Mr. Harry Platt (Manchester) then spoke on

Forms of Arthritis Simulating Tuberculosis.

He emphasised the difficulties which often rendered the early diagnosis of tuberculous arthritis a matter of uncertainty. Even after a careful clinical review of the symptoms and signs, radioscopic examination and the carrying out of accepted pathological tests, it was frequently necessary to give a non-committal opinion and to insist on a further period of clinical observation. The whole question was to some extent influenced by the vague recognition of what the French observers had called "rheumatisme tuberculeux." Although this conception had been presented some 25 years ago it had received little support in Great Britain. Mr. Platt had found no conclusive evidence in favour of the acceptance of tuberculous rheumatism as a clinical or pathological entity. In dealing with chronic joint affections as a whole it was important to recognise that a joint tended to react to the stimulus of a noxious agent along certain conventional lines. It was true that in tuberculous arthritis they were dealing with a definite specific granuloma involving synovial membrane or bone-marrow, but the entire lesion might progress slowly and be comparatively latent. The reaction of the joint to the presence of the granulomatous growth might then simulate other non-tuberculous affections. It was convenient to consider the various common forms of arthritis which simulated tuberculosis at three age-periods: childhood (up to 14), adolescence (14 to 18), and adult life. In childhood the hip-joint could be taken as illustrating the problem of diagnosis. The conditions which gave rise to difficulties were: pseudo-coxalgia; traumatic arthritis, seen in one stage of coxa vara; infective arthritis; extra-articular osseous foci whether of pyogenic or tuberculous origin. In all these forms there might be the clinical picture of a mild hip disease. In the knee-joint the diagnostic difficulties were concerned chiefly with traumatic synovitis and infective synovitis. In adolescence and in adult life infective arthritis often simulated tuberculosis. Operative exploration in knee-joint conditions was often the most valuable diagnostic measure. In general, after a short period of observation, it was usually possible to give a definite diagnosis, but until this stage was reached it was wise to treat suspected cases on anti-tuberculosis lines.

At the afternoon session Sir Henry Gauvain spoke on the present position of

Light Treatment in Surgical Tuberculosis.

He drew attention to the fact that no one who had taken up this treatment had ever abandoned its use—a striking tribute to its efficacy. Many, however, exaggerated its value, regarding it as a cure-all. Light treatment was simply an aid to conservative treatment: it was not specific; it had its dangers, and there were certain cases which probably should not be subjected to it at all. The speaker dwelt first on the tonic effects of the sun upon the mind. At Alton efforts had recently been made to measure this stimulation by subjecting defective and other children to intelligence tests, both group and individual. It was found that the intelligence was raised, on an average, 10 per cent. above that normally shown in any given case. The effects on the body were both local or direct, and remote or indirect. Ultra-violet light had a bactericidal effect on the blood but had very little penetrating power. Penetration could be increased by certain methods—e.g., by exsanguinating a part as was done in lupus by the Finsen light. Pigmentation varied greatly in different individuals. He believed it was a good thing because it protected a patient, who would therefore be able to stand longer exposures and greater degrees of heat and cold. It had also probably a definite prognostic value. Light treatment had no effect on diphtheritic rhinitis or on diphtheritic throats. How the remote or indirect effects of light were produced was not known. The bactericidal power of the blood appeared sometimes to be lowered instead of being raised by the treatment, and he urged that in elderly subjects the bactericidal power of the blood should be tested before and after exposures, so that the treatment might be discontinued where it was found unsuitable. No other artificial light treatment could compare with the Finsen lamp in lupus. The artificial light most nearly approximating to sunlight was the carbon-arc lamp. All types of lamps were used at Alton, each having its own indication.

The last paper of the session was given by Prof. Louis Cobbett, his subject being the

Resistance of Civilised Man to Tuberculosis: Is it Racial or Individual in Origin?

He began by drawing attention to the fact that the diseases of civilised lands ran riot when introduced among isolated and primitive peoples, the converse also being true. People were more resistant to the attack of the infectious diseases of their own countries and districts than to those of foreign diseases with which neither they nor their ancestors had come into contact. The causes of this universal resistance to indigenous diseases he believed to be two-fold: racial immunisation and acclimatisation. By the first should be understood a slow growth of the resisting power of the people which rose by slow degrees, being transmitted by inheritance and developing in accordance with the law of adaptation to environment. By acclimatisation he meant a process which concerned only the individual, not transmitted by inheritance and independent of the history of the race. It was probably really a process of unconscious immunisation, brought about by receiving repeatedly doses of the specific micro-organism too small to cause recognised disease. Acclimatisation did not depend upon race, since members of the same race might be resistant and others susceptible, according to the personal experience of each. A further proof that such resistance or immunity as was implied in the term acclimatisation was not racial was the fact that it was easily lost by residence in a country where the disease was not met with. The speaker gave instances of this, as well as of facts establishing the possibility of acquiring a high degree of resistance to certain infective diseases—e.g., diphtheria—by living in an environment where the diseases were prevalent. On the question of how to distinguish between a resistance of a people which had been acquired ab initio by each individual and one which was the result of causes acting on preceding generations, Prof. Cobbett suggested that the crucial test was its permanence. Individual immunity would disappear in a generation if the people were removed from the infected environment. The point was difficult to prove conclusively in the nature of the case, but when all the circumstances were duly weighed it appeared to him that there was an innate susceptibility to tuberculosis in various races, notably Indian, Negro, and Chinese, which was far greater than that of the white races in the United States, and greater than could possibly be accounted for by purely environmental factors. The speaker concluded that racial resistance and racial susceptibility were real, and were due to hereditary factors deeply fixed in the blood of each race. Superimposed, so to speak, on this high or low resisting power in every place in which the people were brought into contact with the tubercle bacillus was an immunity of the individual. Both racial resistance and individual immunisation played a part in determining the reaction of the people to tuberculosis, and neither factor could safely be disregarded.

On Saturday, the 4th, there was a demonstration of a number of pathological specimens by Prof. Cobbett.

The conference concluded by a visit to the East Anglian Sanatoria, by the kind invitation of Dr. Jane Walker, all the visitors being greatly impressed by what they saw of the extent and character of the work carried on.

The Services.

ROYAL ARMY MEDICAL CORPS.

ARMY RESERVE OF OFFICERS.

Army Dental Corps.—Lt. P. Colk, from Green Howards, Res. of Off., to be Lt.

TERRITORIAL ARMY.

Lt.-Col. (Bt. Col.) C. R. White, from R.A.M.C., T.A., to be Col., and Assistant Director of Med. Services, 53rd (Welsh) Div., vice Col. H. T. Samuel, vacated on completion of tenure of appointment.

Maj. F. T. Rees to be Lt.-Col. and to command 53rd (3rd Western) Casualty Clearing Station.

Capt. A. A. Finnigan (late unattached List O.T.C.) to be Lt., and relinquishes the rank of Capt.

Lt. E. B. Murrell (late R.F.A., S.R.) to be Lt.

A. M. Robertson to be Lt.

DEATHS IN THE SERVICES.

Surgeon-Major Arthur Edwin Temple Longhurst, who retired from the medical department of the army in 1875 on half-pay, and who died recently at the age of 93, was a veteran of the Crimea and Indian Mutiny. Born at Kirby Mallory, Leicestershire, in 1831, he qualified with the M.R.C.S. Eng. and L.S.A. in 1853, and after acting as house surgeon at the Loughborough Infirmary and Dispensary joined the medical department of the army. Later he graduated at St. Andrews University. In the Crimea he was at the Siege of Sebastopol and for his services received the medal and clasp and the Turkish medal. While stationed with Florence Nightingale in the hospital at Scutari he formed with her a friendship which endured till her death. During the Indian Mutiny he was at the attack on Jugdespore, was mentioned in despatches, and received the medal. From 1861 to 1865 he was personal surgeon to General Sir Hugh Rose, Commander-in-Chief in India, and retired in 1876. After his retirement from the army he took up medical practice in Belgravia.

Correspondence.

"Audi alteram partem."

RADIUM EMANATION.

To the Editor of THE LANCET.

SIR,—The report in the lay press of the speech of the chairman of governors of Middlesex Hospital is destined to convey the impression that the Middlesex Hospital is responsible for what is undoubtedly a step in the real progress of radium therapeutics.

The remarks made by Mr. S. A. Courtauld when presiding at the annual court of governors have been made without a due appreciation of, and without sufficient knowledge of, what has been done in other centres, and more especially in Manchester. For the past ten years the Manchester and District Radium Institute has been harnessing the gas given off by radium in solution (originally called "emanation" by Sir Ernest Rutherford and "niton" by the late Sir William Ramsay, and now for some inexplicable reason called "radon"), and sealing it up in tubes for use at the hospital, or for distribution among the eight participating hospitals included in the original scheme of the Manchester and District Radium Institute.

Not only so, but "seeds" containing the emanation gas have been in constant and daily use during the past six years. The authorities of the Manchester and District Radium Institute have, however, definitely declined to send tubes, spicules, or seeds haphazard over the country, realising that radium or its emanation gas is too dangerous a material to place in the hands of all and sundry. Realising also the many risks inherent in its possibly indiscriminate employment by those not fully conversant with its radio-active properties, they have very rightly insisted that any radium or radium emanation sent out from the Institute shall only be used on the advice and under the supervision of the radiologist to the Institute.

The methods of harnessing or bottling radium detailed in the report, and described as if they were new and original, are practically identical with the methods which have been in daily use at the Manchester and District Radium Institute for the past ten years, the emanation plant, liquid air pump, &c., being confined in a specially built room lined with thick sheet lead and having a "safe" door weighing over two tons.

Middlesex Hospital authorities have been fortunate in obtaining on loan a considerable supply of radium from the original war stock held by the Government, but, even allowing for this, their own stock can be little larger than that held by the Manchester and District Radium Institute and paid for by the generosity of Manchester citizens.

We feel that, unwittingly no doubt, the report of this speech will convey the impression that the Manchester and District Radium Institute is behind the times in its scientific arrangements, whereas in reality it has been in the very van of progress from its inception and formation in 1914, as can be demonstrated to anyone sufficiently interested to call at the Institute.

We are, Sir, yours faithfully,

ARTHUR BURROWS,
Radiologist.
W. MILLIGAN,
Hon. Secretary and Treasurer.
Manchester and District Radium Institute, Nelson-street,
Manchester, April 3rd, 1925.

To the Editor of THE LANCET.

SIR,—In reply to the letter of Capt. Hayward Pinch in your issue of April 4th, under this heading, the Radium Committee of the Middlesex Hospital do not hold themselves responsible for certain unjustifiable claims which have appeared in the press respecting the new Radon Centre at the Middlesex Hospital. This centre has been established at the request of the Medical Research Council, and with the financial support of the British Empire Cancer Campaign, to enable a wider research to be made into the uses of radium emanation. The services of the new installation will not be restricted to the Middlesex Hospital, but will be available for certain other hospitals.

The Middlesex Hospital has always recognised the valuable pioneer work of other centres in the use of emanation in this country, and has already in the lay press disclaimed priority in this field.

I am, Sir, yours faithfully,

W. SAMPSON HANDLEY,
Chairman of the Radium Committee of the Middlesex Hospital.

April 6th, 1925.

TUBERCULIN DISPENSARIES.

To the Editor of THE LANCET.

SIR,—In your issue of March 7th last there appeared a letter from Dr. Annie McCall under this heading. I have looked, in succeeding issues, for other letters called forth by this one, as there is a sort of challenge in it as to the relative value of tuberculin treatment. In former days there would have been many. Why are there none now? Does it mean that by the majority tuberculin has been relegated to the limbo of forgotten and useless remedies? Or does it mean that tuberculin has achieved an unchallenged place in therapeutics? I fancy that the former is the true explanation. Yet if Dr. McCall's figures are supported by evidence they are surely a striking proof of the high value of tuberculin treatment.

Dr. McCall only states that she is told that there is this evidence, and one would be glad to learn the original facts on which her statement is based. I, for one, after having treated several hundreds of patients with tuberculin in an experience dating back to 1910, when I first learnt to use tuberculin at Victoria Park Hospital (under the late Dr. George Heron, who claimed to be the first to use it in this country, having studied under Koch and who persisted in its use right through the time of its darkest days), am prepared to accept her figures, as I believe in the efficacy of tuberculin. I believe from experience that there are only three remedies of proved sovereign value for the treatment of pulmonary tuberculosis. They are: Hygienic living as learnt in a sanatorium, rest, and tuberculin. Why, then, is tuberculin not used far more than at present? I believe because in many hands good results have not been obtained, and in some cases bad results have followed its use; and that there are two causes for this—viz., (1) wrong comprehension of the action and use of tuberculin, and (2) inexperience of its use.

With regard to wrong comprehension, there arose a theory, fatal in my opinion to the success of tuberculin therapy, that the object of the treatment was to increase the dose to the highest quantity possible in order to achieve the highest immunity to tuberculin and thereby nullify the disease of tuberculosis. To this end systems of progressive dosage were introduced. At first simple arithmetical progressions were advocated, then more complicated geometrical progressions, until suggestions of harmonic progressions caused the whole method to die of its own complications. After all, what result could these meticulous methods procure? They could, in many cases, procure a high immunity to tuberculin, and I can remember cases which had achieved a condition of standing big doses of tuberculin without noticeable effect and yet steadily and finally dying of phthisis. Naturally a practice capable of producing such results fell into disrepute; and the theory must fall to pieces, the fact being that immunity to tuberculin does not cure tuberculosis.

Inexperience as a cause of poor or bad results needs little comment except to say that tuberculin is a potent drug capable of doing much harm in inexperienced hands, as are all other potent drugs. How, then, are the notable successes claimed by certain observers to be explained? The successes may be thought not to have been achieved, or may be considered to be only those which would occur without the use of tuberculin. As a believer in the use of tuberculin, I leave this explanation as it stands.

My own explanation is as follows: There seems to me to be only one classification of cases of pulmonary tuberculosis useful for considering the value of treatment. (1) Those, the vast majority, who cure themselves; (2) those in whom, unaided, the issue is doubtful; (3) those who are inevitably overwhelmed. These classes, of course, shade off into each other.

It is obvious that in class (1) the natural forces of the patient fight down the germ by tissue and serum reaction to the germ. I believe that tuberculin has the power to stimulate these curative reactions (fibrosis, &c.) to tubercles as distinct from its power to stimulate the production (by tuberculin reactions) of antibodies to tuberculin which is the product of the tubercles. So alcohol may produce acute reactions (drunkenness) or chronic tissue reactions—e.g., neuritis—or arsenic may give acute reactions (gastro-intestinal irritation) or chronic tissue reactions (skin cancer). In fact, I believe it to be less likely that tissue reactions will occur if acute "tuberculin reactions" are produced than if subreactive doses are given, just as the steady soaker is more likely to get neuritis than he who gets drunk once a week but requires increasing quantities to do so.

On my theory, then, the treatment of tuberculosis by tuberculin consists in giving tuberculin with the object of stimulating tissue reaction to tubercles. The practice of this is not one to be undertaken lightly by the inexperienced. On the contrary, it requires much clinical experience and watching of cases over long periods; and the greater the experience the greater the successes. There is no rule-of-thumb method. Each dose must be prepared *after* consultation with the patient, and not *before* from mathematical tables, and will vary with the findings at the consultation. The human body is not a test-tube and its functions are too numerous and too vastly complicated to be reduced to any mathematical formula. But, fortunately, though experiments are fallacious, experience is frequently a trusty guide, and I believe that those who have most experience with the use (not abuse) of tuberculin will be the most successful doctors for tuberculous patients.

I am, Sir, yours faithfully,

W. O. PITT, M.D., D.P.H.,
Late T.O., Essex County Council, &c.

Worthing, March 29th, 1925.

THE MALARIAL TREATMENT OF GENERAL PARALYSIS OF THE INSANE.

To the Editor of THE LANCET.

SIR,—The letter of Dr. J. D. Silverston published in your issue of April 4th draws attention to a very useful method of transmitting malarial blood from place to place, and I should like to add my own experience of a somewhat similar method. When I began to use cooled blood, precisely a year ago, on April 4th, 1924, I was unaware of Pötzl's method, described by Dr. Silverston, hence the technique I employ differs from that given by this writer.

The method used at Claybury Mental Hospital to defibrinate the blood is as follows. Immediately upon withdrawal from a vein, the blood is placed in a sterile test-tube and stirred with a sterile glass rod. The fibrin collects on the rod. Sometimes, having collected on the rod, the fibrin slips off. In this case the rod will, of course, be found to be quite free from threads, whereas if only a small amount of fibrin has collected the rod will show a slightly roughened appearance. Provided the fibrin has not fallen off the rod, the latter, at the termination of the stirring of 15–20 c.cm. of blood, should have a thick coating of fibrin around it. In any case, the stirring should be continued for five minutes. Defibrination being complete, the red cells may then be injected into the patient to be treated. Since August, 1923, when I commenced using this method, about 70 cases have been successfully inoculated with benign tertian malaria.

When it is desired to delay inoculation for any great length of time the following procedure is used at Claybury Mental Hospital. The defibrinated blood is cooled to a low temperature and the tube packed in sawdust. I have found that it is unnecessary to freeze the blood completely provided the temperature is lowered to a few degrees above 0° C. If there is a small quantity of blood to be cooled, say 5–10 c.cm., the process may be managed on a freezing microtome, such as a Cathcart. The platform should be removed so that the ether plays directly upon the walls of the test-tube, the latter being held in the situation of the platform. With large quantities of blood the microtome is less suitable.

Using the above method blood has been sent from the address below to Colchester, Birmingham, Warwick, and Exeter (170 miles). In most instances the blood was sent in the usual way through the post as a pathological specimen. The inoculations have been successful.

I am, Sir, yours faithfully,

G. DE M. RUDOLF.

Claybury Mental Hospital, Essex, April 4th, 1925.

TREATMENT OF ANOREXIA IN CHILDREN.

To the Editor of THE LANCET.

SIR,—I have read with great interest Dr. Neill Hobhouse's article on this subject published in THE LANCET of March 7th, and take the liberty of suggesting that when considering the case of children refusing solid food, he omits to call attention of the reader to a possibility which may account for the fact. Several cases under my care between the ages of 3 and 5 have shown a distinct distaste for solid food, though at the same time they never complained of sore-throat, and the mothers had never suspected that enlarged tonsils were the cause of the trouble, nor was this perceived until after careful examination. Although infective tonsils are to be considered a source of infection of the stomach which tend to upset the ordinary function of appetite, the crux of the problem may lie chiefly in the *mechanical* obstruction to which they give rise.

I am, Sir, yours faithfully,

Rome, March 26th, 1925. WALTER BENZIMRA.

PETERBOROUGH WAR MEMORIAL HOSPITAL.—The Peterborough Hospital Committee is about to begin the erection of a war memorial hospital to cost £70,000.

ITALIAN SPAS.—The Italian State Tourist Department (known as the E.N.I.T.) is again organising an international visit of doctors to Italian health resorts to take place from Sept. 5th to Sept. 21st next. Among the places to be visited are S. Pellegrino, Fonte Bracca, Acqui, Alassio, San Remo, Ospedaletti, Bordighera, Pietra Ligure, Nervi, Rapallo, Santa Margherita, Portofino, Viareggio, Montecatini, Monsummano, Chianciano, and Fiuggi. At each place a conference will be held, and each member of the tour will receive a copy of the proceedings in his native language. A first-class special train will be provided, and the members will be accommodated at the best hotels. The party will be limited to 200 persons, and a certain number of places will be reserved for members of the families of the doctors. The fixed charge for the tour, including cost of travel, railway, and hotel expenses in Italy, will be lire 1600 (about £15). Members will be granted reduced rate tickets from the Italian frontier to Milan and from Rome back to the frontier. Full particulars and application forms may be obtained from the Travel and Tourist Office of the E.N.I.T., 12, Waterloo-place, Regent-street, London, S.W. 1.

THE BATEMAN APPEAL.

As already explained in THE LANCET, it has been felt that material assistance ought to be offered to Dr. Bateman to meet the legal expenses of his recent successful appeal against conviction and to make good the deficiency in his professional income. Accordingly, the Bateman Fund has been opened and lists of contributions have appeared in recent issues. We have received additional contributions as follows:—

	£	s.	d.
Already received and acknowledged ..	426	4	0
Dr. R. Adams Brewis	1	1	0
Dr. G. N. Campey	1	1	0
Dr. W. T. Hillier	1	1	0
Dr. B. S. Robson	1	1	0
Anonymously	0	10	6
Dr. W. E. McEwan	0	10	0

Remittances should be forwarded to the Manager of THE LANCET, 423, Strand, W.C. 2, and made payable to the "Bateman Fund Account."

Parliamentary Intelligence.

HOUSE OF COMMONS.

WEDNESDAY, APRIL 1ST.

Neurasthenic Patients at Saltash.

Colonel DAY asked the Minister of Pensions whether he was aware that during the past 11 months some 370 men had taken their discharge from the Ministry institution for neurasthenics; how many were discharged at their own request; what were the principal reasons given for desiring discharge; whether he was aware that some of the men were more than 350 miles from their homes; and if he could arrange for men from Scotland, Ireland, and the North of England to be placed in an institution nearer their homes.—Major G. C. TRYON replied: The hon. and gallant Member refers, I presume, to the Ministry Institution at Saltash. During the past 11 months 310 patients (not 370 as stated in the question) have been discharged from this institution. Of these, 171 either discharged themselves contrary to medical advice, or did not return from the leave that had been granted them. No record is kept of the reasons for the discharge in the latter cases, but I am advised that they are ordinarily accounted for by the mental instability and restlessness associated with the condition for which they are receiving treatment. It is the policy of the Ministry as far as possible, and subject to medical requirements, to treat neurasthenic cases in institutions near their homes, and in fact out of 791 cases of neurasthenia under treatment from each of the portions of the kingdom referred to in the question the great majority are in institutions in those parts, and only 37 are at Saltash.

Convictions for Drunkenness.

Mr. GROVES asked the Home Secretary the number of convictions for drunkenness, male and female, in the metropolitan police district for the calendar years 1923 and 1924.—Sir W. JOYNSON-HICKS replied: The total for the metropolitan police district of the figures given in Table VI. of the licensing statistics for 1923 is 23,114 males and 6610 females. The total which it is expected the volume for 1924, now in preparation, will show is 23,512 males and 6536 females.

Progress of House Building.

Mr. MACKENZIE LIVINGSTONE asked the Minister of Health how many houses had been completed under the Chamberlain and Wheatley Acts respectively; how far this number was supplying the normal increase of the population; and how far it was overtaking the existing shortage of houses.—Sir KINGSLEY WOOD (Parliamentary Secretary to the Ministry of Health) replied: Up to March 1st last the number of houses completed in England and Wales under the Housing Acts of 1923 and 1924 was: Act of 1923, 64,246; Act of 1924, 1285; total, 65,531. Considerable numbers of additional houses are being erected without State subsidy. During the 12 months ending on Sept. 30th last the total number of houses completed with and without subsidy was approximately 110,000, and my right hon. friend would expect this number to be exceeded during the current 12 months if present conditions continue. In answer to the second and third questions, I can only say that on the present rate of construction house building is, in the opinion of my right hon. friend, providing for the normal increase of population, and also making progress in overtaking arrears.

Clearance of Slum Areas.

Mr. FENBY asked the Minister of Health what steps, if any, were being taken to clear slum areas; and how many schemes had been started for this purpose since Nov. 1st, 1924.—Sir KINGSLEY WOOD replied: Since Jan. 1st, 1919, 60 slum schemes in various parts of the country have been confirmed, and further schemes are under consideration or in course of preparation. The number confirmed since Nov. 1st last is 11. Up to the end of January last part or the whole of the areas had been acquired in the case of 27 schemes, and clearance was in progress, or had been completed, in the case of 10 schemes. The only other information that is available is that 2145 dwellings for rehousing persons displaced from slum areas had been definitely arranged for at the end of January.

THURSDAY, APRIL 2ND.

Approved Societies and Hospital Contributions.

Mr. TINNE asked the Minister of Health whether he was aware of the large unspent accumulated health insurance funds; and, having regard to the unremunerative services rendered by voluntary hospitals to insured persons, would he bring influence to bear upon the approved societies to make suitable contributions out of this surplus to the funds of voluntary hospitals treating insured persons.—Mr. N. CHAMBERLAIN replied: The answer to the first part of the question is in the affirmative. The answer to the second part is that for some time considerable sums have been paid yearly by societies to voluntary hospitals out of disposable surplus, and I hope these sums may be increased in the future. The matter is, however, primarily one for consideration by societies, though it will no doubt, with other similar questions, be reviewed by the Royal Commission on National Health Insurance now sitting.

Safeguarding Act and X Ray Apparatus.

Dr. LITTLE asked the President of the Board of Trade whether he was aware of the effect of the Safeguarding of Industries Act on X ray workers in this country; that, in some cases, the actual tax which the consumer had to pay, owing to various accessory charges, might be as high as 60 per cent.; that apparatus which was not being manufactured in this country had this duty charged upon it; and whether, seeing that this made it difficult for medical men practising X ray treatment to have the best modern apparatus, he would consider the advisability of removing from the schedule at any rate those types of apparatus which were not manufactured in this country by British firms.—Sir BURTON CHADWICK (Parliamentary Secretary to the Board of Trade) replied: I am unable to conceive how the actual tax paid under the Safeguarding of Industries Act can possibly be at the rate suggested by the hon. Member. I am aware that certain special types of X ray apparatus are not at present produced in this country, but having regard to the purpose of the Act in question, I am not prepared to introduce the legislation necessary to give effect to the hon. Member's suggestion.

Health Insurance Benefits.

Mr. VIANT asked the Minister of Health whether, on the cancellation of their present scheme of additional benefits under the National Health Insurance Acts as from July 5th, 1925, it would be possible for an approved society to transfer the balances on account in respect of non-cash benefits funds remaining at the expiration of their existing schemes to a special assistance benefit fund for the provision of similar non-cash benefits to new entrants or, alternatively, to persons admitted as members in the interval between the date of valuation, Dec. 31st, 1922, and the date of the coming into operation of the new scheme on July 6th, 1925.—Mr. N. CHAMBERLAIN replied: The balances in question can only be applied in supplement of sums available for distribution under a new scheme of additional benefits to members qualified to receive them in accordance with the Act and Regulations. A scheme cannot provide for the utilisation of this money for the provision of non-cash benefits to new entrants from the date of their becoming members, but I may point out that persons admitted as members in the years 1923, 1924, and 1925 will be entitled to participate in the benefits provided under the new schemes at varying dates according to the duration of their membership.

Medical Officers of Health and Housing Shortage.

Lieut.-Colonel FREMANTLE asked the Minister of Health if he would arrange that medical officers of health, in their forthcoming and future annual reports, should state whether or not there was, in their opinion, a shortage of housing available for the working classes in the several parts of their districts; and whether he would define the standard of shortage for the purpose of such report.—Mr. N. CHAMBERLAIN replied: I will give careful consideration to my hon. and gallant friend's suggestion, but I doubt whether it is practicable to define such a standard as is contemplated for general application.

Antitoxin for Scarlet Fever.

Lieut.-Colonel FREMANTLE asked the Minister of Health if his department and the Medical Research Council have now sufficiently examined the efficacy of the toxin and antitoxin for test, prevention, and cure of scarlet fever, as officially used in several of the United States of America; and with what result.—Mr. N. CHAMBERLAIN replied: Investigations are being actively pursued in my department and by the Medical Research Council, and the results will be published from time to time as knowledge is gained. I am advised that these investigations entail prolonged laboratory and clinical observations before a confident statement of the efficacy of these several procedures can be made on the strength of their trials in this country.

The Spahlinger Treatment.

Mr. THOMAS WILLIAMS asked the Minister of Health what steps, if any, he had taken to secure a supply of the Spahlinger treatment for tuberculosis sanatoria in this country; and whether he would give financial assistance to any local authority who obtained a supply of this serum for the use in their institutions.—Mr. N. CHAMBERLAIN replied: As regards the first part of the question, I may say that all practicable steps have been taken by my department to secure a supply of M. Spahlinger's preparations for scientific investigations, and I regret that I am still without information as to when such a supply will be available in this country. As regards the second part of the question this will be considered if and when it arises.

Small-pox Outbreak at Kettering.

Sir MERVYN MANNINGHAM-BULLER asked the Minister of Health if he could give the number of cases of small-pox due to the outbreak in Kettering, and the percentage of the persons thus affected who had been vaccinated.—Mr. N. CHAMBERLAIN replied: Up to March 30th 71 cases of small-pox were notified in the urban district of Kettering and seven in the rural district. Of the total of 78 patients the vaccinal condition of one was doubtful, 11, or 11·1 per cent., were stated to have been vaccinated in infancy, and one at 5 years old. It should be stated that none of these vaccinated patients had been re-vaccinated, and all of them, with the exception of one patient aged 25, were over 30 years of age.

External Examinations at London University.

Mr. HARRIS asked the President of the Board of Education whether any formal communication had passed between Lord Ernle, the late chairman of the Departmental Committee on the Constitution of the University of London, and the Chairman of the Convocation of the University with regard to the future of the external side of the University; and, if so, what was the nature of such communication.—Lord E. PERCY replied: The late chairman of the Departmental Committee addressed a letter to the Chairman of Convocation on Jan. 27th last inviting Convocation to give evidence before the committee. In the course of that letter it was stated that the committee hoped that Convocation would not undertake the labour of preparing and giving evidence on the general question of the continuance of the external examinations conducted by the University, because in the view of the whole committee those examinations had in the past served, and would in the future serve, a useful purpose.

Proposed Legalising of Hospital Tombolas.

Colonel Sir ARTHUR HOLBROOK asked the Home Secretary if he was aware that hospital tombolas, which had been the means of raising several hundred pounds to promote the work of hospitals, had been repressed by the police authorities; and whether he would consider the issue of regulations that these voluntary efforts to assist hospitals should not be discouraged.—Sir W. JOYNSON-HICKS replied: I have no authority to issue instructions which would have the effect of exempting offenders of a particular class from the penalties prescribed by law.

Scheduling of Cannabis Indica.

Mr. FORREST asked the Home Secretary whether he was aware that, in consequence of the scheduling of cannabis indica as a poison, all firms using it, even for minor manufactures of a non-deleterious nature, had had only from Feb. 26th to April 3rd to label millions of articles; and whether, in view of the impossibility of conforming within this time with the regulations, he would postpone the date of their enforcement and in the meantime investigate the need for their existence in these specific cases.—Sir W. JOYNSON-HICKS replied: I am afraid there is no power to postpone the operation of this Order. Under the statute the resolution of the Council of the Pharmaceutical Society for the inclusion of a substance in the Poisons Schedule takes effect one month after the Order of the Privy Council Office approving it has been advertised in the *London Gazette*. As the resolution was passed as long ago as last August, ample notice has been given to all interested parties; and there do not appear to be any grounds on which the Government could properly intervene now. I am sure that no harsh measures will be taken by the Pharmaceutical Society in the enforcement of the law.

MONDAY, APRIL 6TH.

Pay of Indian Army Medical Officers.

Brigadier-General CHARTERIS asked the Under Secretary of State for India whether he was aware that the recent augmentation of pay of British officers in India, both of the British Army and of the Indian Army, applied to all officers except those of the Royal Army Medical Corps, the Indian Medical Service, Army Dental Corps, and the Royal Army Veterinary Corps; that this was certain to prejudice future recruitments for these essential services in India; and would he state the reason for this decision.—Earl WINTERTON replied: Officers of the Indian Medical Service in military employ have been granted the same pay concession as those in civil employ as a result of the recommendations of the Commission on the Superior Civil Services in India, and the same passage concessions as have recently been granted to officers of the Indian Army. The case of the other services mentioned has been reserved for further consideration as there is a possibility of changes affecting them in the near future.

White Lead Convention.

Mr. GEORGE HARVEY asked the Home Secretary whether His Majesty's Government proposed to give effect, either in whole or in part, and to what extent, to the proposals of the draft convention of the International Labour Conference (Geneva, 1921) as to the use of white lead in painting buildings.—Sir W. JOYNSON-HICKS replied: I am considering the introduction of a Bill to give effect to those proposals in the draft Convention as to which there is general agreement, in order that the agreed regulations for the protection of the workers may be brought into operation as soon as possible.

Insanitary Houses.

Viscountess ASTOR asked the Minister of Health in how many cases objections to notices served by local authorities upon the owners of insanitary property, with a view to houses being put into order, had been raised on appeal to his department; and how many of these appeals have been rejected.—Sir KINGSLEY WOOD replied: During the year ended Dec. 31st, 1923 (the last year for which figures are available), notices requiring repairs, &c., under the Housing Acts were served in respect of 25,277 houses. During this year 37 appeals were received by the department, five appeals were formally dismissed, three allowed, and four allowed in part. The remainder were not proceeded with.

Salaries of Health Ministry's Medical Staff.

Colonel Sir ARTHUR HOLBROOK asked the Minister of Health whether the increase of salary of £50 per annum to be given to full-time medical officers of the Ministry whose services were being retained was in lieu of bonus or gratuity; and, if not so granted, would he explain why it was granted, seeing that the work had been and was steadily diminishing in comparison with that of the past five or six years.—Mr. N. CHAMBERLAIN replied: No such increase of salary as is mentioned in the first part of the question has been granted in my department; the second part does not therefore arise.

Juries at Coroners' Inquests.

Mr. CHARLETON asked the Home Secretary whether his attention had been called to the consistent refusal of certain coroners to empanel a jury at inquests even in serious cases; and whether he would take steps to ensure that, where bereaved relatives or representatives acting on their behalf expressed the desire for the coroner's inquest to be conducted with the aid of a jury, this should be done.—Sir WILLIAM JOYNSON-HICKS replied: The answer to the first question is in the negative. With regard to the second I hope shortly to introduce a Bill which will deal with this and other parts of the law relating to coroners' inquests.

COLLEGE OF PESTOLOGY GOLD MEDAL.—At a luncheon of the College held at Pagani's Restaurant, London, on Monday, March 30th, Sir William Simpson Vice-President, in the chair, Sir Ronald Ross presented the gold medal of the College for the best essay on the prevention of malaria to Mr. C. P. Shute, of 82, Rothes-road, Dorking, Surrey. The prize-winning essay had been selected from those of well over 300 competitors in all parts of the world. Honourable mention was made of four other essays submitted, the writers being Mr. E. H. Black, health officer and chairman to the Mosquito Destruction Board at Kuala Lumpur, F.M.S.; Mr. C. Pearce, city engineer of Gibraltar; Dr. Waugh Scott, and Mr. G. Fox Wilson, of the Royal Horticultural Gardens at Wisley.

Obituary.

ABRAHAM EMRYS JONES, M.D. EDIN., J.P.,

LATE SENIOR SURGEON, MANCHESTER EYE HOSPITAL.

Abraham Emrys Jones, in his time one of the best known ophthalmic surgeons in Manchester, died on March 31st at the age of 73. He was born at Llanarth, Cardiganshire, and received his medical education at the Universities of Glasgow and Edinburgh, graduating M.B., C.M. at the latter in 1875. A year later he took the M.R.C.S. Eng., and became house surgeon at the Royal Eye Hospital, Manchester, and in 1879 was appointed honorary assistant surgeon at that institution, having obtained the M.D. Edin. with commendation in 1877. He devoted his attention to diseases of the eye, and soon acquired a large consulting practice in the city. He held the office of consulting ophthalmic surgeon to the Bolton Infirmary, was honorary oculist to Barnes Home Industrial Schools and the Warehouse and Clerks Schools. He was a J.P. of the city of Manchester and a referee under the Workmen's Compensation Act. He served on the Medical Board of the University of Wales, and also on the University Court. Besides being actively engaged in eye work in hospital and in private practice, his abundant energy found other outlets, including much work done for the Manchester and Salford Sanitary Association, of which he was one of the secretaries for 12 years and president for one year, and he contributed papers on literary subjects to the Manchester Literary Club, of which he was a member. In 1911 he was president of the Manchester Medical Society. He was a clear and effective platform speaker. Several years ago he resigned the active duties as senior surgeon at the Manchester Royal Eye Hospital, and later gradually retired from private practice. Some of his popular lectures were published by the Manchester and Salford Sanitary Association. One of his addresses on the Disposal of the Dead had far-reaching effects; it led to the formation of the Manchester Cremation Society, and the subsequent erection of the Manchester Crematorium, of which he was one of the directors. An enthusiastic Welshman, a lover of music, and deeply interested in all that concerned the interests of Wales and the Welsh, he was a patron and president of the Welsh National Society of Manchester. His remains were cremated at the Manchester Crematorium on April 3rd, the Royal Eye Hospital and the Manchester and Salford Sanitary Association being represented by former colleagues. Dr. Emrys Jones leaves a wife, a son, and a daughter.

Medical News.

UNIVERSITY OF LIVERPOOL.—At examinations held recently the following candidates were successful:—

DIPLOMA IN TROPICAL MEDICINE.

J. Black, E. J. Crawford, Mary W. Ellam, F. N. Green, J. T. Johnson, Elizabeth K. Mackay, K. S. Shah (recommended for A. H. Milne Medal), C. H. B. Thompson, and J. J. de Waal.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.—An extraordinary Comitia was held on April 6th, Sir Humphry Rolleston, the President, being in the chair. He referred to the loss the College had sustained by the recent death of Dr. J. A. Ormerod, the Registrar, and, on the motion of the Second Censor, a resolution expressing condolence with his family and referring to his services in the office of registrar for more than 10 years was passed. The President then delivered the annual Presidential address. He referred to the fact that there are now 373 Fellows as against 91 a hundred years ago, and that the Members now numbered 658, while there was still one Extra-Licentiate. He referred to the work of the College during the past year, mentioning the special alteration of the by-laws, permitting the admission of women to the Fellowship. He then delivered obituary addresses upon the 11 Fellows who died during the presidential year—namely, Dr. Hugh Walsham, Dr. R. Hingston Fox, Sir Sydney Russell-Wells, Dr. Sidney H. C. Martin, Dr. Henry Gervis, Dr. J. F. W. Tatham, Dr.

Herbert Williamson, Dr. Clement Dukes, Sir James Mackenzie, the Rt. Hon. Sir Clifford Allbutt, and Dr. J. A. Ormerod. On the motion of Sir William Church, the Senior Fellow, a hearty vote of thanks was accorded to the President for his address. Sir Humphry Rolleston vacated the presidential chair and the College proceeded to the election of President. Sir Humphry Rolleston obtained 83 votes out of 91 voting, and was re-elected President for the ensuing year. Licences were granted to four candidates, and permission given to seal their diplomas. Communications were received from the Secretary of the Royal College of Surgeons, dated Feb. 13th and March 12th. The meeting was then constituted as a special extraordinary Comitia for the purposes of a report from the Censors' Board. This report having been adopted, the following resolution was passed on the motion of the Senior Censor: "That William Lovell be declared to be no longer a Licentiate of the College; that he forfeit all the rights and privileges of a Licentiate; and that his name be expunged from the List of Licentiates—during the pleasure of the College." The President afterwards dissolved the Comitia.

Royal College of Surgeons of England.—At a quarterly meeting of the Council of the College, held on April 2nd, with Sir John Bland-Sutton, President, in the chair, the Jacksonian Prize for 1924, on the pathology, diagnosis, and treatment of œsophageal obstruction, was awarded to Mr. Arthur L. Abel (University College Hospital), surgeon to Kensington General Hospital. A certificate of honourable mention was awarded to Mr. Edward Musgrave Woodman, surgeon, Ear and Throat Department, General Hospital, Birmingham. The subject of the prize for 1926 is the pathology, diagnosis, and treatment of abscess of the brain. Mr. Alexander Primrose, professor of clinical surgery and Dean of the Medical Faculty, University of Toronto, and Mr. John Basil Hall, consulting surgeon, Royal Infirmary, Bradford, and President of the British Medical Association, were elected Fellows of the College under Section 5 of the Charter of 15 Vict., relating to Members of 20 years' standing. The following diplomas were conferred on candidates who have complied with the necessary by-laws:—*M.R.C.S.*: Thomas S. Donovan (Birm.) and Clifford James (Middlesex Hosp.). *L.D.S.*: Joseph H. Adler (Charing Cross and Royal Dental Hosps.).

Fellowship of Medicine and Post-Graduate Medical Association.—There will be an intensive course in medicine, surgery and the special departments beginning on Monday, April 20th, at the Hampstead General Hospital. Daily sessions will be held from 10.30 until late afternoon, comprising clinical demonstrations, clinics, operations, and exhibitions of cases. A course of proctology will be held at St. Mark's Hospital from April 20th to May 2nd. Members of the staff will perform operations followed by lecture-demonstrations and demonstrations in the O.P. departments on the various phases of rectal disease. At the Queen's Hospital, Hackney-road, there will be a special course lasting a fortnight from April 20th to May 2nd. This will embrace work in all departments pertaining to children's disease, and the instruction will be continued throughout the day, mornings and afternoons. Early application is requested for these courses, and copies of the syllabus may be obtained on application to the secretary to the Fellowship, 1, Wimpole-street, London, W.

In May the following courses will be given: Dermatology at the Hospital for Diseases of the Skin, Blackfriars; diseases of infants at the Infants Hospital; diseases of the throat, nose and ear at the Central London Throat, Nose and Ear Hospital, and psychological medicine at the Maudsley Hospital.

Manchester and District Radium Institute.—At the annual meeting at the Institute on April 2nd the attendance of supporters was the largest on record, and the report presented by the radiologist, Dr. Arthur Burrows, showed that of 843 patients registered, 776 received treatment, the remainder being found unsuitable. The total number of cancerous patients treated was 577. A very considerable improvement of immediate symptomatic cures was noted. At the end of the year 183 patients were described as "well," and 288 as "improved." Ninety-three cases of malignant disease, exclusive of rodent ulcer, were rendered free from symptoms and signs of disease. The number of rodent ulcers treated was 101, and of these 53 were "well" at the end of the year. The total number of out-patient attendances was 6234, and the number of in-patients 966. Of the 12 beds for in-patients, eight are used for non-paying patients. Last year the expenditure exceeded the income by £855. Sir William Milligan, honorary secretary and treasurer, said they were probably a long way from the actual cure, but they were definitely arresting the disease for periods of three, five, and seven years among people pronounced by the most competent surgical authorities as inoperable and incurable.

Norwich Contributory Scheme.—The income of the Norwich Hospitals and Medical Institutions Sunday and Saturday Fund last year amounted to £27,065; £24,320 of this was raised by the contributory scheme. Eleven institutions benefit by this money.

St. Thomas's Hospital, London.—The Court of Chancery has sanctioned a scheme, which will cost £58,000, for the extension of St. Thomas's Hospital. A building is to be erected in Lambeth Palace-road, near the hospital, for the accommodation of the students and staff, which will include a club in connexion with the medical school.

The Medical Missions Department of the Society for the Propagation of the Gospel is holding the annual meeting this year in the Great Hall of the Church House, Westminster, on April 22nd, at 8 P.M. The chair will be taken by the Bishop of Singapore, and Dr. F. S. Drewe, who is home on furlough from Holy Cross Hospital, East Pondoland, will show some new slides illustrating his work there.

Newcastle Royal Infirmary.—At the annual meeting last week serious overcrowding was reported. Although during the past year the number of emergency beds put up had reached 1600, more than 1000 patients are awaiting admission. An average of 16 accident cases are treated daily, and increased sickness among the nursing staff is attributed to the overcrowding of the wards. The workmen's contributions reached £16,000.

Leeds Infirmary.—The board report that last year's income showed a deficiency of £27,000, and that while the work grows rapidly they have neither buildings nor money to meet it. At the end of the year 1317 patients were awaiting admission. The 18,000 accident and emergency cases were swollen by the increase in motor accidents, and the nursing staff has had to be increased by two-thirds.

Strasburg: Post-Graduate Course on Tuberculosis.—In October a post-graduate course on pulmonary tuberculosis will be held at the Faculty of Medicine of Strasburg, under the auspices of the Anti-Tuberculosis Association of Alsace and Lorraine. A comprehensive programme of lectures and practical demonstrations dealing with many aspects of tuberculosis has been organised by Dr. Vaucher, of the University of Strasburg, from whom further particulars may be obtained at 22, rue de l'Université, Strasburg.

Post-Graduate Study in Vienna.—The seventeenth medical post-graduate course, organised by the Medical Faculty of Vienna, will be held in Vienna from June 30th to July 4th inclusive, when a series of lectures and demonstrations will be given on the subject of modern therapy. Special courses in the various branches of medicine are also held monthly, and foreigners are especially welcomed. Full information and a detailed programme of the courses may be obtained on application to the Dean of the Medical Faculty, The University, 1, Ring des 12 November, Vienna.

National Association for the Prevention of Infant Mortality and for the Welfare of Infancy.—From April 23rd to June 25th Dr. Cicely Peake will deliver at Carnegie House, 117, Piccadilly, W. 1, on Thursdays, from 7.30 to 8.30 P.M., a course of elementary lectures on infant care, especially intended for creche nurses and probationers. For the whole course of ten lectures the fee will be 10*s.*, for any single lecture 1*s.* 3*d.* An examination for the creche nurses' elementary certificate will be held on June 27th at 2.30 P.M. Tickets can be obtained either from Miss Maddock, secretary of the National Society of Day Nurseries, 117, Piccadilly, W. 1, or Miss Durst, secretary, National Association for the Prevention of Infant Mortality, at the same address.

Dublin Royal Victoria Eye and Ear Hospital. This institution has just been awarded a legacy which will enable it to build a new wing and so complete the original plans for the hospital. The money constitutes the residue of the estate of a Mrs. Lewis, who directed that it should be used to build a hospital in Dublin. The sum (amounting to about £20,000) proved to be insufficient for this purpose and the executors therefore asked the direction of the courts as to the disposal of the money. A large number of hospitals presented their claims before Mr. Justice Meredith and it was expected that he would distribute the money between several charities, as had been done in previous cases by the Irish courts. He decided, however, to keep the sum intact. Whatever hopes in regard to other institutions have been disappointed, it will be agreed that Mr. Justice Meredith has made a proper and fair disposal of the fund.

Housing in Dublin.—A conference of those interested in the improvement of housing in Dublin was held last week at the Mansion House, Dublin. Among the speakers was Dr. Dwyer, one of the Commissioners charged with the administration of the city, who stated that since the Commissioners had been appointed they had closed 52 insanitary houses, using a barracks handed over to them by the Government to house those dislodged. They could not close insanitary houses more rapidly because they had no place to put the occupants. They intended to ask the ratepayers to face a large increase in the estimates for building. The conference established a Central Housing Council for the purpose of stimulating and educating public opinion, and of carrying out a publicity campaign culminating in a Housing Week. The ultimate objects of the Council are to improve tenement houses, to assist voluntary housing schemes, and to press for a corporation housing loan.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Friday, April 17th.

ELECTRO-THERAPEUTICS: Extra Meeting, 8.30 P.M.

Papers:

Sir Henry Gauvain: The Organisation and Work of a Light Department in a Surgical Tuberculosis Hospital.

Dr. G. Murray Levick: The Selection of Apparatus for the Production of Artificial Sunlight.

Prof. Russ and Dr. Peacock: Ultra-violet Radiation.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.

Tuesday, April 14th.—11 A.M., Dr. McDougal: Electrical Dept. 12 noon, Dr. Burrell: Chest Cases. 2 P.M., Mr. Sinclair: Surgical Out-patients.

Wednesday.—2 P.M., Dr. Dowling: Skin Dept. 2 P.M., Dr. Burnford: Medical Wards. 2.30 P.M., Mr. Donald Armour: Surgical Wards.

Thursday.—11 A.M., Sir Henry Simson: Gynæcological Wards. 12 noon, Mr. Sinclair: Abdominal Surgery (Lec.). 2 P.M., Mr. Simmonds: Surgical Out-patients.

Friday.—10 A.M., Mr. Dudley Buxton: Dental Dept. 10.30 A.M., Dr. Pritchard: Medical Wards. 2 P.M., Mr. Vlasto: Throat, Nose, and Ear Dept.

Saturday.—10 A.M., Dr. Saunders: Medical Diseases of Children. 10 A.M., Mr. Banks-Davis: Operations on Throat, Nose, and Ear.

Daily, 10 A.M. to 6 P.M., Saturdays, 10 A.M. to 1 P.M., In-patients, Out-patients, Operations, Special Departments.

CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn-road, W.C.

Friday, April 17th.—4 P.M., Dr. Dan McKenzie: Diseases of the Labyrinth.

Appointments.

Martin, Basil W., M.B., B.Ch.Aberd., has been appointed Regional Medical Officer to the Ministry of Health.

Rae, H. J., M.B., B.Ch.Aberd., D.P.H., County Medical Officer of Health, Aberdeenshire.

Royal Victoria Infirmary, Newcastle-upon-Tyne: Davidson, S. Wheatley, M.D., B.S. Durh., M.R.C.P. Lond., Honorary Assistant Physician to the Electrical and Massage Department; Armstrong, C. N., M.B., B.S. Durh., B.Hy., D.P.H., Honorary Medical Registrar; Coll, A. H., M.B., B.S. Durh., Allen, S. B., M.B., B.S. Durh., Lishman, F., M.B., B.S. Durh., Stokoe, J., M.B., B.S. Durh., House Physicians; Yeoman, J. C., M.B., B.S. Durh., Michaels, K. V., M.B., B.S. Durh., Bell, D., M.B., B.S. Durh., Jones, M. H., M.B., B.S. Durh., Ogilvie, A. G., M.B., B.S. Durh., Coltman, J. F., M.B., B.S. Durh., House Surgeons; Nasmith, J. J. D., M.B., B.S. Durh., Holmes, R. L., M.B., B.S. Durh., Mack, T. H., M.B., B.S. Durh., [illegible], W. F., M.B., B.S. Durh., [illegible], C. H., M.B., B.S. Durh., and Harvey, J. Blair, M.B., B.S. Durh., House Surgeons to Special Departments.

Vacancies.

For further information refer to the advertisement columns.

Bath, Winsley Sanatorium.—Asst. R.M.O. £250.

Belfast, Ulster Hospital for Children and Women, Templemore Avenue.—Hon. Asst. Surg.

Birmingham, Queen's Hospital.—Res. Anæsthetist at rate of £70 to £100. Also Clin Asst. Hon. £50.

Birmingham Union, Selly Oak Hospital.—Jun. Res. Asst. M.O. £300.

Blackburn and East Lancashire Royal Infirmary.—Third H.S. £150.

Brighton, New Sussex Hospital, Windlesham-road.—Hon. Asst. Anæsthetist.

Bristol, Southmead Hospital.—Res. Med. Supt. £650.

British Hospital for Mental Disorders, &c., 72, Camden-road, N.W.—Hon. Phys.

Cairo School of Medicine.—Asst. Prof. of Chemistry. L.E. 720.

Cardiff, Prince of Wales's Hospital for Cripples and Limbless.—Res. H.S.

Chester, City and County of.—Asst. M.O.H. and Asst. Sch. M.O. £600.

Chorley, Lancs, Chorley Hospital.—H.S. at rate of £150.

Croydon County Borough.—Deputy M.O.H. and Deputy Sch. M.O. £780.

Derby, County Mental Hospital, Mickleover.—Jun. Asst. M.O. £350.

Dorset County Hospital, Dorchester.—Hon. Dental S.

Eastcote, Middlesex, St. Vincent's Orthopædic Hospital.—Res. M.O. at rate of £150.

East London Hospital for Children and Dispensary for Women, Shadwell, E.—Res. M.O. £200. Also H.P. at rate of £125. Also Morning Cas. O. at rate of £120.

Evelina Hospital for Children, Southwark, S.E.—H.S. at rate of £120.

French Hospital and Dispensary, 172, Shaftesbury-avenue, W.C.—Radiographer.

Huddersfield, Storthes Hall Mental Hospital, Kirkburton.—Asst. M.O. £400.

London Lock Hospital, 91, Dean-street, W.—H.S. at rate of £200.

London Temperance Hospital, Hampstead-road, N.W.—Surg. Reg. 10 guineas.

Manchester Royal Infirmary.—Asst. Res. Surg. O. at rate of £150. Also H.S. to Aural, &c., Dept., at rate of £50.

Metropolitan Hospital, Kingsland-road, E.—H.P., H.S., Jun. H.P., Jun. H.S., and two Cas. O.'s. Each at rate of £100. Also Surg. for Dis. of Nose, Throat, and Ear.

Newcastle-on-Tyne, Ministry of Pensions Hospital.—Jun. M.O. £350.

Newcastle-on-Tyne, Royal Victoria Infirmary.—Med. Reg. £50.

Nottingham, Bagthorpe Institution and Infirmary.—Res. Asst. M.O. at rate of £300.

Oldham Union, Poor-law Institution, Rochdale-road.—Res. Asst. M.O. £300.

Prince of Wales's General Hospital, Tottenham, N.—Hon. Surg. Reg. and Hon. Med. Reg. Each £200. Also Hon. Asst. S. to Ear, Nose, and Throat Dept.

Putney Hospital, Lower Common, Putney, S.W.—Res. M.O. £150.

Queen's Hospital for Children, Hackney-road, Bethnal Green, E.—Clin. Asst.

Sheffield City Hospital.—Two Asst. M.O.'s £300 and £250 respectively.

Sheffield Royal Infirmary.—Surg. Reg. £200. H.S. £80. Also Dental S.

Sutton, Surrey, Downs Hospital for Children.—Asst. M.O. £550.

The Secretary of State for the Home Department gives notice that he proposes to appoint two more Physicians as additional Medical Referees under the Workmen's Compensation Act, 1906, for the Sheriffdom of Lanarkshire. Applications for the posts should be addressed to the Private Secretary, Scottish Office, and should reach him not later than April 29th, 1925.

Births, Marriages, and Deaths.

BIRTHS.

Barkley.—On April 1st, at Woodcroft, Weybridge, the wife of Dr. T. Yuille Barkley, O.B.E., of a son.

Hine.—On March 30th, at Rossmore, Roseberry-avenue, Harpenden, the wife of Montague Hine, M.D., F.R.C.S., of a son.

Ilott.—On March 28th, at Garden-road, Bromley, Kent, the wife of Cyril H. Ilott, M.B., of a daughter.

Rossdale.—On March 31st, at Upper Berkeley-street, the wife of Dr. George Rossdale, of a son.

Sneyd.—On April 3rd, at Harley-street, the wife of George C. Sneyd, F.R.C.S.Irel., of a son.

DEATHS.

Crawford.—On April 1st, at Addison-road, Kensington, W., William Thomas Crawford, M.D., of Worksop, Notts.

Hayward.—On April 3rd, suddenly, at Meigle, Scotland, Charles W. Hayward, M.D., D.P.H., Barrister-at-Law, of Prince Edward-mansions, London, W., and late of Liverpool.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Comments, and Abstracts.

THE HISTORY OF MINING HYGIENE, WITH SPECIAL REFERENCE TO THE MINES OF THE WITWATERSRAND.*

BY CHARLES PORTER, M.D., B.CH. IREL.,
M.R.C.S. ENG., D.P.H. CAMB.,
MEDICAL OFFICER OF HEALTH, JOHANNESBURG; LECTURER IN PUBLIC HEALTH TO THE WITWATERSRAND UNIVERSITY, AND MEMBER OF THE PUBLIC HEALTH COUNCIL OF THE UNION OF SOUTH AFRICA.

As head of the Department of Public Health, it falls to my lot to inaugurate the first course in mining hygiene, not only of our young and progressive University but, so far as I can ascertain, the first course of this nature which has been offered by any educational body. From ancient writings and from the discovery of various, almost prehistoric, mine workings we know that the recovery from the earth of its mineral treasures has engaged the activities of man from very early times.

As regards *mine ventilation*, Pliny (A.D. 60) wrote:—

"In deep shafts, the occurrence of *Sulphurata* or *Aluminosa* vapour is fatal to the diggers. The presence of this peril is shown if a lighted lamp let down into the shaft is extinguished. Apart from these evils, the air itself becomes noxious with depth, which can be remedied by constantly *shaking linen cloths*, thus setting the air in motion."

Agricola, the sixteenth century author of a quaint and delightful storehouse of ancient mining information entitled "De Re Metallica," further tells us that—

"Air is driven into the extremities of deep shafts and long tunnels by powerful blowing machines . . . . which the Greeks call *Pneumatika* and the Latins *Spiritales*—though they do not give off any sound—which enable the miners to breathe easily and carry on their work."

Precautions against *falling rock* were also enforced, and Diphilus, a rich mine-owner at Athens, was denounced by Demosthenes and condemned to death for avariciously removing the supporting pillars from his silver mine, which by law he was strictly forbidden to do.

As regards the workers, we know that they were usually slaves, very frequently prisoners-of-war, whose fate, with forced labour, insufficiency of food, and horrible surroundings was indeed dreadful. For centuries, in later times, and in various countries from Sicily to Iceland and Poland to Siberia, the life of the mine-worker was too often synonymous with a living death, and we know that even in England till (as time goes) a comparatively recent date his lot was indeed unenviable and apparently brutalising.

During an official residence of some 12 years between 1891–1902 in the North of England, although one heard of miners' nystagmus, of mine-gas explosions, of heavy mortality among tin-miners, and of miners' dwellings (especially perhaps in the county of Durham) overcrowded and wretched, yet one never heard any mention whatever of the necessity of *underground* mining hygiene, except in connexion with an outbreak of enteric fever in the late 'nineties, ascribed to the drinking in a northern mining village of water pumped from a mine contaminated by infected underground workers. A serious outbreak of hookworm amongst the tin-miners in Dolcoath, Cornwall, in 1901 seems to have marked the dawn of recognition in England of the necessity of freeing mines from fæcal pollution, as had already been advocated in Belgium and Germany. Following investigation by Dr. J. S. Haldane, F.R.S., a service of underground pail-closets was established and strict orders issued for preventing excremental fouling. But for many years afterwards no serious general attempt was made to enforce this important aspect of mining hygiene in England, though it is understood that, comparatively recently, mine-owners have been invested under the Coal Miners Act of 1911 and the Mining Industries Act of 1920 (*Ch. 50, 10 and 11 Geo. V.*) with this responsibility, as well as others, such as the provision of baths and of means for drying clothes. One is unaware, however, that any special responsibilities are imposed in regard to the purity of underground drinking water.

Historical Survey of Mine Sanitation on the Rand.

In Johannesburg, previous to 1903, the "mines" were outside the municipality; mines sanitation was practically non-existent, except in regard to matters in connexion with ventilation, blasting, and change houses. No provision was made for disposal of excrement underground, and night-soil removal from the surface works was carried out, more or less perfunctorily, by private contract. In October, 1903, the extension of the municipal area brought in the mines and it was arranged between the mining authorities and the council's representatives that all matters of surface sanitation, such as native quarters, housing, water-supply, and refuse removal services, be controlled by the municipality, through a specially selected mines sanitation inspector directly responsible to the medical officer of health. As regards underground drinking-water supplies, excrement disposal, &c., this inspector was placed under the directions of the Government mining engineer, but did not officially concern himself with the very technical problem of ventilation, and this arrangement has been found during the succeeding 20 years to be particularly satisfactory to all concerned, and especially appreciated by mine managers. The work of the late Mr. Alexander Cowie, C.E., the first mines sanitation inspector on the Witwatersrand, was uniformly excellent, tactful, and most effective, and the following extracts from his first annual report are very interesting:—

"It is gratifying to be able to state, as regards surface arrangements, that recommendations and notices under the Public Health By-laws are almost invariably found on re-inspection to be complied with . . . . the almost general provision of comfortable housing accommodation, of all necessary sanitary conveniences, and of systematic and approved scavenging arrangements, testifies to the fact that the requirements of good sanitation are far from being looked upon as a secondary consideration."

As regards *underground* sanitation, Mr. Cowie wrote:—

"Strict attention is paid to securing on each working level, at suitable sites, a sufficient number of sanitary conveniences, properly ventilated, lighted, and disinfected. The maintenance of careful general scavenging throughout the workings is also called for. A detailed report is furnished after each inspection to the Inspector of Mines for the Johannesburg district, and a copy of each such report is forwarded by him, through the Mines Department, to the Mine Managers and to the M.O.H. Johannesburg, for information. Night-soil from the mines is brought to the surface in buckets with clamped water-tight covers, and their subsequent cleansing and disinfection are attended to by the Municipal Scavenging Department."

The opening years of the present century were, however, both in England and South Africa, marked by considerable activity in other and wider directions affecting the health of the mining workers, and notably in regard to the scourge of miners' phthisis. That certain dusts are peculiarly productive of phthisis has long been recognised, and as far back as 1861 the undue mortality from diseases of the lungs among English metalliferous miners had been reported by the late Dr. Farr to a Royal Commission appointed in that year. The recommendations of this Commission were in the main carried out, but this undue mortality still persisted and seemed indeed to be associated with metalliferous mining in most parts of the world, being specially notable in Cornwall, where many of the sufferers were said to be returned Transvaal miners.

Dr. Haldane, with whom were associated Messrs. Martin and Thomas, were, therefore, commissioned in 1903 to inquire into and report on the health of the miners employed in the mines in Cornwall, with special reference to the injurious effects alleged to be produced by the state of ventilation in the mines, the dust arising from the use of rock-drills, and the introduction of impurities into the working places through the use of compressed air. They reported in 1904, recommending the prohibition of percussion rock-drills in hard stone, without satisfactory precautions for preventing the inhalation of dust; the enactment of special rules for minimising the inhalation of dust, and securing a suitable and cleanly excrement removal service.

At this period, however, the mortality from silicosis was notoriously greater on the Witwatersrand than anywhere else, and in December, 1902, Lord Milner appointed the first Transvaal Miners Phthisis Commission to inquire into the extent and cause of this condition and the measures necessary for combating it. In May, 1903, this Commission recommended water-sprays and jets for minimising the dust produced by rock-drill and blasting operations, the adequate ventilation of the working places, the provision of an efficient sanitary system, and of suitably warmed and convenient change houses, and the non-use of low-flash-point lubricants in the air cylinders of compressors.

In 1904 Lord Milner nominated a further Commission to investigate and report on the accommodation and air space required in the compounds for coloured employees of the mines of the Witwatersrand district. The main result of its deliberations was the evolution of the Rand mines type of hut in which the importance of adequate air change, in contradistinction to cubic space allowance per head, was accorded fuller recognition than had previously been the case, such cubic space allowance being fixed at 200 cubic feet per head, in view of the special facilities provided for free ventilation and air change. With some modifications suggested by experience, this type of hut still enjoys official sanction.

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* An address delivered at the Witwatersrand University.

In 1907 Lord Selborne gazetted the Mining Regulations Commission to undertake a general revision of these regulations with special reference (inter alia) to ventilation, underground sanitation, and change houses. This Commission's inquiry covered nearly the whole range of mining hygiene, and its members had the satisfaction of seeing effect given to most of their recommendations within a quite unusually short period.

Miners' Phthisis.

Prominent amongst those who assisted these various commissions with their considered experience and the results of their special study of this subject was the late Dr. Donald Macaulay, in association with Dr. Louis Irvine, now a very senior member of the expert medical staff which has made the work of the Miners' Phthisis Medical Bureau so widely known and appreciated. It is both a duty and a privilege, especially in a community where such services are so soon and callously forgotten, to recall the fine pioneer work of these two keen investigators in this and other important aspects of mining hygiene. Early in the career of the first Government of our newly-formed Union, it passed the Miners Phthisis Allowances Act, No. 34, of 1911, and at once appointed yet another "Miners' Phthisis Commission" to report on the extent to which the disease was prevalent, the degrees to, and the stages at which incapacitation occurred, and the necessary medical considerations to be borne in mind in connexion with the statutory provision of compensation.

This Commission was followed in 1912 by the creation of a standing advisory body, the Miners' Phthisis Prevention Committee—

> "To inquire into by experimental or other investigations and to report from time to time upon the improvement of the methods for the prevention of Miners' Phthisis in the Witwatersrand Gold Mines, and to advise upon the introduction of a systematic and uniform policy and the amendment of the Mining Regulations which may be necessary for combating the disease."

This Commission submitted its final report in 1916.

Lastly, on August 1st, 1916, the Miners' Phthisis Medical Bureau was instituted, its chairman being Dr. Watkins Pitchford. Its main object and functions are:—

1. To examine all persons presenting themselves for employment on the scheduled mines and to determine those who are suitable for underground employment.
2. To examine all working miners at intervals of six months with the object of detecting the presence either of silicosis or of tuberculosis in such miners.
3. To examine all applicants for compensation on the ground of the presence of silicosis or tuberculosis and to determine in what stage, if any, of the former disease, such applicants may be.
4. To supervise in the cases of native mine employees similar examinations which are actually conducted by the medical officers of the mines. No compensation, however, is granted to any native until he has been examined by the Medical Bureau.

The following brief account of the results of the working of the Bureau and of the present position was supplied by Dr. Pitchford at my suggestion in 1922 for the information of the mining industry in Australia. It has kindly been brought up to date by Dr. Irvine, and is of a very interesting and striking nature.

Since the passing of the Miners Phthisis Act of 1916 and up to July, 1924, two cases only of silicosis have originated in men (whether previously miners or not) who have been passed as fit for underground work at the initial examination of the Bureau. During this period 12,381 European men have received certificates of fitness to follow mining work, and 6132 of these are known to have obtained underground employment. As the total number of European miners is about 14,000, and the average number actually engaged in underground work in scheduled mines during the year is only 10,000 or 11,000, it is evident that a substantial proportion of the latter are men who hold the certificate of initial fitness.

Silicosis.

All the cases of silicosis, whether complicated or not by tuberculosis, with the exception of the two mentioned which have originated amongst our miners since 1916, have, then, been in "old miners"—men who, being in employment prior to 1916, were not required to pass the initial medical examination. It is not contended that this relative freedom from silicosis of those who have been recruited since 1916 is entirely due to the exclusion of physically unsuitable men by the initial examination: for the continuous improvement in underground conditions of work, which has been going on since about the year 1911, must now be bearing fruit. Managements and men are at present unanimous in their efforts to carry out the dust-prevention regulations.

The prevention of dust, however, would not, by itself, suffice to prevent the spread of the disease, especially tuberculosis, amongst the miners. Our law requires every miner to be medically examined at least once in six months, in order to detect those who have developed tuberculosis. This enables the Medical Bureau to secure the prompt removal of every person who is tuberculous and thus to protect the other miners from infection. A man who has developed silicosis is also notified of the fact, so that, if he desires, he may make application for compensation. The great majority do so. But if a man develops tuberculosis, whether or not he also has silicosis, he is obliged to give up his occupation at once.

The number of working miners who have been found to be the subjects of silicosis complicated by tuberculosis for each year since 1917 has been 116, 120, 24, 17, 24, 19, and 20. This reduction is gratifying. Pulmonary tuberculosis, without silicosis, is now considerably less common among our miners than it is among the male population of the industrial towns of England and Wales. No case of silicosis in the secondary stage has originated amongst our employed miners since the year 1919.

The consolidating and amending Miners Phthisis Compensation Act of 1919 introduced a new stage of silicosis which has to be legally recognised—viz., that stage in which the physical signs of the disease first appear in their earliest detectable form. This stage is termed the "ante-primary" stage, because it refers to a condition antecedent to that previously known to all the miners as the "primary" stage. Its recognition obviously requires not only that the miner should be examined by an expert, but also that the expert shall be able to refer to carefully kept records of previous examinations. In the first year in which the existence of this new stage was legally allowed for, 562 cases were certified; in the second year 219 cases, in the third year 254 cases, in the fourth year 255 cases, and in the fifth year 318 cases, all of them, with the exception of two in the fourth year, being, as already stated, in "old miners."

It is agreed by all impartial observers that the work of the Medical Bureau is indispensable to continued progress. The value of its initial examinations has now become obvious to all, and the service which it renders the individual worker by keeping him periodically informed as to his health with respect to pulmonary disease is greatly appreciated by the miners themselves. It is necessary to point out, however, that the work of the Medical Bureau would not have been so successful were it not for the following conditions: The members of the Bureau devote their whole time to the work and are not allowed to engage in private practice; the Bureau is appointed and controlled solely by the Government—neither the employers nor the workers have any power of interference with its duties; and the examinations of the Bureau are always supported by standardised X ray negatives of high technical quality.

Mortality from Pneumonia.

Apart, however, from miners' phthisis, the very great mortality from pneumonia amongst native, and especially *tropical* native, mine-workers gave rise to much misgiving, and in 1911–12 the problem was investigated on the Witwatersrand by Sir Almroth Wright, who reported in 1913 recommending anti-pneumococcal inoculation as the most promising preventive measure. His researches were continued by our friend, Sir Spencer Lister, who, after careful study of the various forms of pneumococcus found in association with the disease, produced a vaccine which, at a conservative estimate, has reduced this pneumonia mortality from 40–50 per cent., an achievement which has made him deservedly famous, and of which all his confrères are very proud.

Lastly, in December, 1913, at the suggestion of Mr. Samuel Evans, the late General Gorgas, known all over the world as the man who made work in the Panama Canal area possible from the health point of view, was invited by the Chamber of Mines to visit and report on the health conditions of our mines, especially in relation to the prevalence of pneumonia amongst natives. His chief recommendations were the provision of a larger amount of floor space for each occupant of the compounds; also, where possible, their dispersion from large barracks into single huts and small rooms; and, secondly, the reorganisation and centralisation of the native hospital system.

The Present Position.

As regards the practice of mining hygiene in Australia, one ventures to think, from some personal observation and considerable inquiry, that the Witwatersrand has little, if anything, to learn from that Dominion. Judging, too, from the very brief references in the long series of fine annual reports of the Surgeon-General of the Public Health Services, the same remark applies to the practice of mining hygiene in the United States of America.

Even from the foregoing somewhat hastily compiled résumé of the efforts by Government and by the mining industry during the last 20 years, not only to minimise but, if possible, to "cut out" miners' phthisis and pneumonia as the most deadly factors in mining mortality, and generally to create a healthy environment amongst its mine-workers, one submits that the Witwatersrand has to a large extent led the way in showing the world how such problems may be tackled with a large and promising measure of success. Those who have had even any small share in this work are rightly proud of it; and one recalls with pleasure and gratification the words in which the Right Hon. J. H. Thomas, M.P., Colonial Secretary of the late English Labour Government, after a morning spent during his recent visit in examining the surface works and the conditions of white housing on one of our great mines, publicly stated that he had been immensely impressed by what he had seen, and by the fact that the conditions under which the workers lived were far better than anything that could, he feared, be hoped for in the Old Country. With a personal knowledge of these conditions in both countries, one entirely accepts this statement.

Coming to the course of lectures now inaugurated, one recalls a remark by that charming gentleman, the late General Gorgas, that the Witwatersrand's wealth of clinical material marked it out as the seat par excellence of a medical school; and I think that a similar statement applies with equal force to its facilities for the study of mining hygiene. The desire of this University and the industry is to assist in every way in utilising these advantages, and our acknowledgments and thanks are specially due to the Rand Mines Group, which has now made it possible to take the first step in training mine officials of all classes to appreciate the real necessity and benefit of the high standard of hygiene that has been laboriously reached, and the duty of all of them to assist in maintaining and improving it.

The unique course now instituted covers housing, clothing, and diet of natives, sewage and refuse disposal in its widest meaning, mine ventilation, the administration of mine hospitals, the physical examination of native recruits, the work of the Miners Phthisis Medical Bureau, the management of epidemic outbreaks, and the prevention of accidents. I have little doubt that this very comprehensive and useful course will prove not only of very live interest, but of material practical benefit to officials as well as to the mine-workers—both white and coloured—for whose welfare they work.

PUBLIC HEALTH AT HONG-KONG.

THE civil population of Hong-Kong in 1923 was estimated at 597,300, of which total 15,500 were "British and foreign civilians," the remainder being Chinese. The general birth-rate for civilians is said to be 7·39, and that of the Chinese 6·97 per 1000; but "from the nature of the case, it is practically impossible to arrive at a correct estimate of the Chinese birth-rate." The general civilian death-rate in 1923 was 25·98 per 1000, for Chinese 26·27, and for non-Chinese 11·83. The total deaths at 1 year of age or less numbered 1558 Chinese and 29 non-Chinese; the infantile mortality ratio for the latter was 81·23 per 1000 births. At the three principal hospitals in the colony, the Government civil, the Tung Wah, and the Kwong Wah, the total patients treated increased from 17,937 in 1922 to 22,202 in 1923. The chief diseases were beri-beri (2091 cases), malaria (1640), pulmonary tuberculosis (1029), and syphilis (830). Dr. J. B. Addison, principal civil medical officer, states in his report[1] with regard to beri-beri that he "was informed that there was an increase in the price of provisions, and this must have led the poorer classes to live more than ever on an extensive [? exclusive] rice diet, the only rice commonly used being the white polished variety." There was a large increase in malarial cases treated at the three hospitals mentioned, from 921 cases in 1922 to 1640 in 1923; the incidence was specially noted amongst Chinese policemen recruited from Wei-hai-wei (on the coast of Shantung province, N. China). At the Kwong Wah Hospital 6359 in-patients were treated, of whom 39 per cent. received Chinese treatment and 61 per cent. Western treatment, as compared with 39·9 and 60·1 per cent. in the previous year respectively; 68,179 out-patients were treated, 64·2 by Chinese methods and 35·8 per cent. according to Western practice. In 1922 the corresponding percentages had been 40·2 and 59·8 per cent.; the preference for Chinese treatment appears to be decided, and the decrease in Western treatment seems regrettable, and to need attention. At the Tung Wah Hospital, Victoria, 10,478 in-patients were treated, a considerable increase on those treated in 1922 (8336); in this hospital 4823 and 5655 received native and Western treatment respectively, as compared with 3714 and 4622 in 1922. The out-patient visits numbered 170,858, as compared with 168,951 in 1922. The cases taking native treatment decreased from 130,280 in 1922 to 124,120 in 1923; while those taking Western treatment increased from 20,722 to 42,302; in addition the visits at the Eye Clinic (under Western treatment) increased from 2919 to 4130. The difference in the amount of acceptance of Western treatment in the different institutions is noteworthy, and invites inquiry as to the reason for this difference.

Hong-Kong ranks fourth in the world's seaports in regard to "tonnage entered," and second for "tonnage cleared" (14,922,232), being only surpassed in this respect by New York. The inward-bound ocean steamers numbered 6321, all of which were visited by the health officers; 219 arrived in quarantine, and both passengers and crews (numbering 32,169 persons) were examined before *pratique* was granted; only eight of these vessels were detained in quarantine, small-pox (8 cases) being the reason; the vessels were fumigated and disinfected, and all persons on board vaccinated. The total persons examined amounted to 210,810, averaging 575 examinations for each day in the year.

HEALTH CONDITIONS IN SIERRA LEONE.

Mr. G. C. Du Boulay, Acting Colonial Secretary, has been responsible for the preparation of the annual report for 1923. It states that the number of European residents during the year in the colony and Protectorate was: officials, 188; non-officials (including white Americans), 420; military, 486. The population of Freetown was, according to the census of 1921, 44,142, and the birth-rate per 1000 in 1923 was 19·3, and the death-rate per 1000 30. In the colony other than Freetown the population was 41,021, the birth-rate 18·7 per 1000, and the death-rate 21·5 per 1000. Owing to the non-registration of many births the "available" birth-rate is undoubtedly much below the actual birth-rate, and for this reason the infantile mortality-rate (437 per 1000 in Freetown and 201 in the colony other than Freetown) appears a good deal higher than it really is. It is nevertheless excessively high, and infant welfare work is being undertaken on an increasing scale with a view to reducing it. According to the census figures the males exceeded the females by 28·5 per cent. and 24·3 per cent. in Freetown and the rest of the colony respectively. This is an additional factor in producing the low birth-rate. Two cases of small-pox were reported in Freetown and there were 17 cases in the Protectorate. Chicken-pox was fairly frequent both in the colony and in the Protectorate. 21,517 persons were vaccinated during the year, of which 10,294 were successful, 4266 unsuccessful, and 6957 not inspected.

A census of the colony and Protectorate was taken in November, 1921. The report, published in 1922, shows that the population has increased from 1,403,132 in 1911 to 1,541,311 in 1921. The population of the colony proper shows a very considerable increase—viz., from 75,572 to 85,163. This increase is wholly due to a striking augmentation of the population of Freetown—viz., from 34,090 to 44,142. The estimated native population of the Protectorate has increased from 1,323,151 in 1911 to 1,456,003 in 1921.

The Colonial Hospital was completely destroyed by fire early in 1920 and all records were burnt. A portion of the new hospital was completed in 1922, consisting of three blocks of two wards each, operating theatre, kitchen, laundry, fumigatory block, and staff latrine and bath block. In addition to the foregoing, the new hospital was planned to comprise three more blocks for Africans, one for Europeans, quarters for the resident surgeon and nursing sisters, offices, and stores. No work was undertaken in these additions in 1923, but a resumption is contemplated at an early date. Patients admitted to the Colonial Hospital during the year numbered 1577, and there were 121 deaths; 71 operations were performed. 200 patients were admitted to the maternity ward, the largest number recorded. 11,355 out-patients were treated in the hospital, the total attendances being 18,320. At the lunatic asylum, Kissy, there were 101 inmates on Dec. 31st, 1922; 56 were admitted during 1923, and 23 died. The patients who are mentally and physically fit are employed on light work. There were 281 admissions to the Kissy infirmaries during the year; a total of 319 cases were treated, and there were 47 deaths. To the nursing home there were 131 admissions, 50 being Government officials; 2 non-officials died.

The climate of Sierra Leone is tropical with a heavy rainfall and high atmospheric humidity during the greater part of the year. The shade temperature rarely falls below 70° F. On the other hand it rarely rises, even in the dry season, above 95°, and there is always a sufficient daily range of temperature to render the mornings and evenings relatively cool. It is not always damp. Speaking generally, there are four months of very dry weather when little or no rain falls, and four months of varying conditions with a moderate rainfall for a tropical country. There is a single rainy season lasting, roughly, from May to the end of October. This occurs during the period of the south-west monsoon. It is preceded and followed by a period of thunder-storms known as tornadoes, which travel in a direction from east to west. The rainfall in 1923 (125 inches) was almost exactly equal to the average for the past ten years, but a good deal below the average for the past 40 years.

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[1] Hong-Kong Government Printers. 1924.

There are facilities for playing cricket, football, tennis, and golf in Sierra Leone. As the country is hilly, cycling is laborious and horses do not thrive; but for some distance out from the town the roads are good enough for motor-cars and motor-cycles to be used. Local meat is by no means as good as good English meat, but when properly cooked is quite nutritious. Excellent fresh fish can be bought, and, apart from potatoes and onions, which are imported, fresh vegetables and fresh fruit can be obtained at reasonable prices throughout the year.

ABERDOVEY.

This is a popular health resort on the west coast of Wales, six hours' journey by express from Paddington; it has a sheltered and sunny climate, and although there is a considerable rainfall the winter and spring months afford, as a rule, a gentle retreat by comparison with eastern and northern England. With the object of making Aberdovey better known the Town Improvements Committee, of which Dr. F. S. Jackson is the honorary secretary, have issued a new official illustrated guide containing an account of the historical and legendary history of the town "leading back into the darkest ages of antiquity," together with notes on the opportunities offered for golfing, bathing, boating, angling, walking, cycling, and motoring.

A FRENCH SPA.

Vittel, a well-known French spa, was founded in 1854 by Louis Boulomié, who conceived the idea of erecting a town around the springs of medicated water at that spot. His son, Dr. P. Boulomié, has now written the story of the foundation of this town and its development into a fashionable centre for the benefit of his grand-children (Histoire de Vittel. Paris: Maloine et Fils. Fr.7.50). This little book gives an interesting story in a free and easy style. A short sketch of the founder precedes a description of the gradual growth of Vittel, and abundant photographs illustrate the progress of 70 years. Its extent may be realised from statistics, for in 1860 less than three thousand bottles of water were despatched, while at the present day about 15 million bottles of Vittel water are sent each year to all parts of the world.

OPEN SPACES AND PLAYING FIELDS.

An appeal has been made by three ex-Prime Ministers and by leading members of all political parties, and many groups of social workers for the formation of a National Playing Fields Association in order to coördinate the activities of local societies in this connexion and to urge the creation of a sub-department of sport in the Ministry of Health. The idea will be welcomed by medical men, who recognise the importance of physical recreation and who support the Metropolitan Public Gardens' Association for the same reason. This Association has for many years done excellent health work by providing or preserving open spaces, and at a recent meeting of the Association at Denison House, Vauxhall Bridge-road, the President, Lord Meath, announced that Sir Henry Cowan, M.P., was about to introduce the Open Spaces Bill for giving additional powers to local authorities to acquire lands for playing fields. The news was also confirmed in regard to Ken Wood that the remainder of the estate had been puchased by Lord Iveagh with a view to its preservation for popular uses.

GARDENING.[1]

Many of our readers not only love gardens but superintend practically their own gardens or work assiduously in them. And the learned Jonathan Hutchinson's intetest in the similarities to be traced between human and botanical development and pathology is shared by many medical practitioners. The work on gardening issued by Messrs. George Newnes, Ltd., whose first instalments reach us this week, will therefore receive support from the medical profession, who will certainly derive from its perusal, judging by the contents of the first two sections, much fundamental information set out in an orderly manner. Especially, with such a work of reference as it promises to be, will it be possible to plan ahead, for a diary is given, corresponding to the date of the section, under which the timely operations for the month are ranged. All who have the control or practical management of a small garden will recall the sort of difficulty which arises when something ought to be sown by a certain date, and when the only suitable spot is already occupied by something which ought not to be sacrificed, but cannot safely be moved at that date. Similar dilemmas will occur to the recollection of everyone who has gardened; they know that such troubles can be avoided by keeping a time-chart, and will welcome the orderly information provided by "The New Book of Gardening."

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[1] The New Book of Gardening. Edited by Walter Brett, F.R.H.S. London: George Newnes, Ltd. In 26 fortnightly parts. Parts I. and II. 1s. 3d. each.

SMOKE ABATEMENT.

We have received from the Smoke Abatement League of Great Britain a copy of the report of the successful conference which was held at Manchester in November, 1924. The report of 300 pages is excellently printed, and as many of the problems of smoke abatement were dealt with at the conference by acknowledged experts and from various points of view, the document ought to be in the hands of all who take an interest in the question. The hon. secretary of the League is Mr. C. Elliott, 33, Blackfriars-street, Manchester. The price of the publication is 5*s.*, post free 5*s.* 6*d.*

EYES AND HAIR DYES.

In the medical report presented to the annual meeting of the Bath Eye Infirmary, the hon. surgeon, Dr. J. Burdon-Cooper, called attention to dangers to the optic nerve caused by the use of hair dyes. "We believe," he said, "this type of case to be on the increase and a warning is needed as very severe trouble may result, and we have known eyes completely lost owing to this practice." He considers that legislation respecting the sale of poisonous dyes is needed.

THE ENERGY EXPENDITURE OF CRYING.

Estimation of the calorie requirements of infants has always been complicated and rendered uncertain by the striking difference which exists between the basal metabolism and the augmented metabolism of an active child. Reference is made (*Jour. A.M.A.*, Feb. 21st, 1925) to a communication of Murlin and others, in which stress is laid on crying as an augmenting factor in metabolism. It is stated that metabolism is doubled during the period in which an infant cries. A sickly child, whose general muscular activity is low, may thus be expending more energy than is commonly supposed. If, as is often the case in healthy infants, crying is accompanied by active movement of the limbs, the total metabolism must obviously be raised to a figure far in excess of the basal rate. These observations have direct bearing on the quantitative aspect of infant feeding; the ease with which extremely large variations in the energy exchange are produced should be borne in mind in all attempts to estimate the food requirements of infants in terms of calories.

THE TEACHING OF MOTHERCRAFT.

As Sir Arthur Newsholme recently pointed out[1] at the annual meeting of the National Baby Week Council, the infantile death-rate had been halved; as a matter of fact the number of deaths under 12 months of age per 1000 babies born has fallen in England and Wales from 154 per 1000 in 1900 to 69 per 1000 in 1923, and he instanced among the chief factors which had produced this wonderful improvement those of publicity and education. For a number of years the Board of Education have had under consideration the teaching of infant care and management to girls in attendance in elementary schools, and some five years ago the Medical Department of the Board prepared a memorandum dealing with the question in some detail. As a result there has been a considerable extension in the teaching of infant care, though much remains still to be done, and a revised Circular (No. 1353)[2] has just been issued by the Board of Education. This important little pamphlet, to quote the words of the preface, should "arouse a keen interest in the subject among many who have not yet realised the opportunities and responsibilities of elementary and other schools in this direction," while serving at the same time as a guide to the many workers who have already recognised the value of the work. As the great majority of the mothers of the future pass through the elementary schools, it is obvious that school teaching of the subject must bear good fruit when motherhood is reached, but further, as quite a large number of girls at school are compelled to play the part of nurses to their younger brothers and sisters, school teaching of mothercraft must have a double benefit. The circular, which is written by Dame Janet Campbell, Chief Woman Medical Adviser to the Board of Education, outlines the course of teaching which it is advisable to pursue, setting forth the method of teaching in elementary, secondary, day continuation and trade schools.

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[1] The Lancet, March 14th, p. 580.

[2] The Teaching of Infant Care and Management of School Girls. 1925. H.M. Stationery Office. 2*d.*

Royal Free Hospital, London.—In the absence of the Queen, who had intended to perform the ceremony, Lord Riddell last week opened the Alfred Langton Home for Nurses at the Royal Free Hospital, Gray's Inn-road. The new building provides accommodation for 65 nurses, each of whom has a separate bedroom.

Croonian Lectures

ON THE

RÔLE OF FATS IN VITAL PHENOMENA.

By J. B. LEATHES, F.R.C.P. Lond., F.R.S.,
PROFESSOR OF PHYSIOLOGY, UNIVERSITY OF SHEFFIELD.

LECTURE I.*

Physiological Significance of Fats.

The rôle assigned to fats in physiology is and has been for a long time threefold. In order of precedence determined by seniority these are: that they add beauty to the outline of the human form; that they serve as a protection for delicate organs against injury, and for the body as a whole against cold; and, finally, that they constitute the principal fund of reserve fuel on which the system can draw in times of shortage.

But there have long been indications that the physiology of fats could not be so quickly dismissed. The material that enters into the composition of an organism may be potentially fuel and yet actually something more. If the essential chemical constituent of living matter is protein, the protein of the muscles and of other organs that waste in starvation is clearly the material that supplies the nitrogenous needs of the heart that does not waste.

Is it possible that the fat that is found in the parenchymatous cells of the various organs, though it may at need serve as a source of potential energy, has other more essential functions to perform? Is it possible that any of it is actually, like the proteins themselves, needed for the very maintenance of the form of life, a part of the material that lives? For much the larger part of the fat that is found in the body this possibility is excluded. That is probably why this question is not more frequently put. The days when most of us come fresh to the study of physiology are half of them spent in cutting away fat in the dissecting-room as material that has no interest or significance. In adipose tissue the cells have relapsed into a state of ignoble obesity. They are merely receptacles of riches for others to prey upon. But organs and tissues may be practically free from adipose tissue and yet, when subjected to analysis, they are found to contain fat.

We have in physiology to define fat in our own way. The chemical definition of fat is too narrow. There are compounds of the higher fatty acids which in the narrower chemical sense may not be fats. But the physiological significance of fats resides so largely in the properties of the long chains of carbon atoms of the higher fatty acids that the physiology of fats rests upon the physical and chemical properties of these chains, and cannot be confined to their behaviour only when they are combined with glycerol alone as simple glycerides. Some of the fatty acid chains can only fulfil their physiological destiny by entering into combination, even if it is only temporarily, with other groups besides that of glycerol; and if they do they do not cease for the student of physiology to be fat. That is why in the estimation of fat in animal organs the method now generally adopted is to liberate the fatty acids from all the combinations in which they occur, determine their amount, and give the result in terms of fatty acid.

Differences between Fat in Adipose Tissue and in Organs.

There are three points that the analysis of the fat in animal organs brings out which bear on the physiology of fats, three points of difference between such fat and that which is found in adipose tissue. In the first place the fatty acids, or some of them, are different; in the second the combinations in which they occur are, in part at least, different; and lastly, instead of varying in amount with accidental variations in the state of nutrition, they show a general tendency to remain constant around certain mean values.

Differences in Fatty Acids.

The fatty acids are different. In the adipose tissue of any species the fat has as a rule a certain constant composition, in which saturated and unsaturated acids occur in proportions that are more or less fixed. In different species these are different: lard, suet, tallow, goose-fat differ from one another, but each of them has constant properties, largely, though perhaps not solely, determined by the nature of the food taken by the species of animals in which it is deposited; and in any species the composition may be altered by alterations in the fat contained in the food. These differences in the fat of the adipose tissue are therefore accidental. Adipose tissue fat is, broadly speaking, the fat taken as food. But in the organs the fatty acids are no longer entirely the same; here too, it is true, saturated acids are found, but with them are associated unsaturated acids, other than oleic acid, which are not found in the adipose tissue, and must therefore have been produced in the body. This is shown by the amount of iodine absorbed by the acids which is, except occasionally in the liver, much greater, and shows a constancy that has a different significance from the accidental constancy of the fat of the connective tissue in this respect. Moreover, the acids themselves, or characteristic derivatives of them, can be isolated and identified.

Combinations of Fatty Acids.

The combinations in which the fatty acids occur are different, because a considerable amount of the fatty material is associated with phosphoric acid and groups containing nitrogen, and from the organs lecithine and other compounds of fatty acids which contain phosphorus and nitrogen can be obtained. Direct estimations of the amount of these combinations of fatty acids cannot be made. But the total fatty acids from all combinations having been determined, it is possible to determine the amount of phosphorus present in combinations which are soluble in solvents for fat, and from the proportion between the quantities found, on certain assumptions, inferences can be drawn. Lecithine and cephaline, for instance, yield two molecules of fatty acid for one atom of phosphorus. If the fatty acids have 18 carbon atoms this means that the amount of fatty acid obtainable from these compounds would be about 18 times as great as the amount of phosphorus they contain. If these are the only compounds occurring in an organ that contain phosphorus and dissolve in these solvents it is clear that determinations carried out on these lines tell us the extent to which the fat in an organ takes these forms.

This has been done more systematically in recent years by A. Mayer and Schaeffer,[1] and some of their results are given in Table I., which is from one of their papers.

Table I.—*Value of the Ratio of Total Fatty Acid to Phosphorus Extracted by Fat Solvents in the Organs. (In Lecithine and Cephaline this Ratio is 18.)*

—	Kidney.	Lung.	Pancreas.	Liver.	Serum.
In man (one case)	21·7	—	51·8	36·1	—
Dogs	22·1	22·1	27·0	21·4	23·5
Rabbit	22·0	25·3	—	19·6	13·6
Guinea-pig ..	24·9	18·8	—	10·0	23·5
Pigeon	26·6	16·5	—	32·6	23·0
					Fowl
Horse	—	—	—	20	23·0
Ox	—	—	—	29	23·5
Mouse	—	—	—	28	—
Sheep	—	—	—	—	23·1
Pig	—	—	—	—	23·2

It is clear that interpreting these figures on the implied assumptions we should arrive at the conclusion that considerably the major part, about three-quarters, of the fat in these organs in almost all cases was composed of compounds such as lecithine.

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* These lectures were prepared for delivery before the Royal College of Physicians of London in 1923. Lectures II., III., and IV. will appear in subsequent issues.

Constancy of the Amount of Fat in the Organs.

Lastly, while the total amount of fat in the body as a whole varies greatly because of the great variations in the amount stored in connective tissues in different states of nutrition, the amount in the organs is subject to variations which are, except in the liver, comparatively small. In the great majority of cases the fatty acids constitute between 2·5 and 4 per cent. of the weight of the organs, or between 10 and 16 per cent. of their dry weight. In the voluntary muscles the amount is sometimes more and the variations are greater. Whether the cause of this variability, so far as it affects the same muscle in the same species, is anything more than the result of the presence of more or less interstitial adipose tissue may be questioned. In the spleen the fatty acids generally amount to less than 10 per cent.

Upon the constancy of the amount of fat in the organs great stress has been laid by André Mayer, Terroine, and others associated with them; and the point which they have brought out which is of greatest significance is that the organs of animals starved to death contain substantially the same proportion of fat as those of animals that have been normally fed. This is a fact that has not generally been expected. When it is said that a starved animal will use up all the fat in its body before it dies, this applies properly only to the fat stored in the adipose tissue. In the organs it is impossible for the fat to be all used up; it is an essential part of the cell substance, and cannot be dispensed with any more than the proteins so long as the cell is alive.

The Cholesterol Content of Fats.

In addition to these three prime differences between the fat of adipose tissue and that found in the cell protoplasm of the organs that do the work of the body, there is a further point of difference the importance of which it is difficult to estimate. While the fat in connective tissues contains only barely detectable amounts of cholesterol, in the organs cholesterol is always present. It appears to be functionally, as well as in part chemically, associated with the fat. Cholesterol esters of fatty acids are found in the blood, in the adrenal gland, and in certain conditions in the kidney. In nervous tissue, which contains more cholesterol than any other, it is found to be chemically free; but it is there anatomically so intimately associated with fatty components that it is difficult to believe that it is not functionally, too, in the closest relationship with them. André Mayer has traced constant quantitative relations between the amount of cholesterol and the amount of fatty acids found in the various organs, which are shown in Table II. He particularly comments on the fact that the differences in this respect found in different organs are the same in the different species examined; in each species the ratio for any organ is remarkably constant, and for all species the ratios for the different organs come out in the same order. The lung gives the highest value, then the kidney and liver follow, and the lowest value falls to muscle. He regards the protoplasm of different types of cells as differing from one another much as do different alloys of the metals, the properties of each type depending upon the proportions in which the ingredients occur in it. In the neuron fatty components and cholesterol constitute nearly 10 per cent., in a liver cell 3 to 4 per cent., in a red blood corpuscle less than 1 per cent. There is more fat and more cholesterol in red muscle than there is in white, and still more in the heart. The relations between cholesterol and fatty acids appears, according to Mayer's observations, to determine the amount of water in proportion to solids held by a type of cell, and also the amount of water that any type of cell will take up when immersed in water. The water taken up varies, he finds, inversely with the amount of fat, and directly with the amount of cholesterol that the cells contain. Thus the lung takes up more water than the kidney, the kidney than the liver, and so on in order down the list shown in Table II. In the muscles which contain varying amounts of reserve fat which is not built up into the protoplasmic fabric, and differ in this respect from other organs, the amount of water taken up varies directly with the cholesterol and inversely with the phosphorus associated with fatty acids; so that they also come into line. In starvation the organs as they waste lose protein and fat in proportion, but appear to retain cholesterol, so that the ratio of cholesterol to fatty acid in the cell rises, and with this change the amount of water taken up by the cells when immersed in pure water is increased correspondingly. (Table III.)

TABLE II.—*Relation Between the Amount of Cholesterol Found in Various Organs and the Fatty Acids they Contain Expressed in Percentage of the Latter. (A. Mayer and Schaeffer.)*

—	Dog.	Rabbit	Pigeon	—	Dog.	Rabbit	Pigeon
Lung ..	20·0	17·1	24·1	Heart ..	4·3	—	—
Kidney	10·5	13·3	9·1	Testis ..	2·3	—	—
Liver ..	6·5	5·4	7·9	Muscle .	2·3	7·3	1·6

TABLE III.

—	$\frac{\text{Cholesterol}}{\text{Fatty acid}}$ (per cent.).	Imbibition: g. H_2O taken up by the cells reckoned per 100 g. of solid contents.
Normal liver ..	8·4	509
Starved ,, ..	13·0	1133
Normal muscle ..	7·3	560
Starved ,, ..	9·0	917
,, ,, ..	15·7	1194

This puts the fats on a different level from that to which they have generally been assigned. Everyone has known that *in starvation the brain and nervous* system do not lose weight; that means, though it is not usually pointed out, that the organ which contains the largest amount of what may be called organised fat can dispense with none of it if it is to live. And while other organs may lose weight, 30 per cent. or more, the proteins in them appear to be sacrificed as readily as the fat. The original relation between fat and *protein is found to have been preserved* to the end, as if this relation were the very essence of the constitution of the cell; as if, if I may quote words I used some years ago, fats were as indispensably built into the most intimate organisation of living matter as proteins themselves.[2]

From time to time biologists have recalled to mind the remark of Hoppe Seyler, made in 1866, that lecithine and cholesterol occur in every animal and vegetable cell, as well as the observations of Hermann recorded in the same year that the aliphatic narcotics, alcohol, ether, chloroform, all of them liberate hæmoglobin from the blood corpuscles. This property he considered, like their narcotic action, to be the result of their solvent power for cholesterol and lecithine, substances which he had recently shown to be present in the corpuscles. You will remember that Hans Meyer in 1899, and about the same time Overton, were among those on whom these early observations were not lost. Meyer clearly lays it down that the action of the substances he investigated proved for him that fats enter into the chemical structure of the cells on which these substances act, *and that in this structure they are the seat of its functions.* Overton's conception of the lipoid cell membrane was recognised as coming very near the truth, though the expression that he gave to it has not been *in that form generally acceptable.*

CHEMISTRY OF FATTY COMPOUNDS.

One of the reasons why progress in this direction has been and is likely still to be slow is the extreme difficulty that is presented by the more complex compounds of fatty acids as subjects of study and investigation. An important step forward has, however, been made, inasmuch as their chemical nature has been cleared up. By the work of H. MacLean,[3] Parnas,[4] and most recently Levene,[5] it is possible to obtain lecithine pure. The difficulty experienced by earlier workers has been shown to be due in part to the association with it of cephaline, in which an organic primary amino takes the place of the quaternary choline in lecithine. Levene has also defined the constitution of the third phospholipine sphingomyeline. He has, moreover, given good reason for believing that these three are the only such compounds that exist. Sphingomyeline introduces, however, complications. Into its composition there enter groups which, while clearly related to the known fatty acids, are not so familiar as those in lecithine and cephaline. But these groups occur also associated with galactose, instead of phosphoric acid and choline, in the galactolipines or cerebrosides.

So far as the pure chemistry of these substances is concerned therefore, the first steps, those that cost most, have been taken and a secure foothold obtained. But if we provisionally take the position to which A. Mayer and Schaeffer have advanced, if we regard the fat in cells as no less concerned with the structural organisation of cell substance than the proteins themselves, does what we know at present help us to form clear ideas of the relationship in that structure between the different constituents? It must be admitted that it is not yet sufficient for that.

PHYSICAL STATE OF CELL FAT.

There are two commonly current conceptions of the physical state of the fat in cells, for each of which there is foundation in familiar facts. We are led by one group of facts to think of it as enclosed in the liquid cell substance, by another to think of it as surrounding this cell substance as it were in a membrane. Microscopic observations reveal fat in connective tissue corpuscles as a mass included in the cell, distending it so that it is merely a protoplasmic receptacle for oil. The signet ring cells seen occasionally in the liver are in a lesser degree essentially the same. In other cells it is not uncommon to see a number of smaller drops included in the cell fluid, which in optical behaviour, solubility, and staining properties are unmistakably drops of oil. In many more, some would say by generalisation in all normal cells, much finer particles, the mitochondria of Benda or granules of Altmann, are recognisable, and these, too, may be shown by their solubility and behaviour with fixing reagents and with dyes, though with somewhat more difficulty, to be also fatty in nature. Fauré-Fremiet and Mayer,[6] and Mayer, Rathery and Schaeffer [7] have shown that the granules in the kidney and liver behave with solvents and with oxidising fixative fluids as if they contained unsaturated fatty acids which oxidation converts into hydroxy acids.

Similar fatty inclusions have been brought into view in tissues such as the normal heart and voluntary muscle-fibres stained with Sudan III. after the use of similar fixing fluids (E. T. Bell, 1912)[8] and with alkaline Scharlach R. solution after fixing with neutral formalin (Hays Bullard, 1916).[9]

Beyond this state of subdivision and dispersion histology cannot follow the fat in cells. But it is a well-known fact that cells in which it is easy to detect by histological methods fatty material in comparatively gross droplets do not necessarily contain any more fat than those in which the ordinary technique fails to reveal any at all. In the normal heart of guinea-pigs no fat can be detected by a technique which 24 hours after a dose of diphtheria toxin shows the guinea-pig's heart to be loaded with fatty droplets, and yet such heart muscle may be shown to contain no more fat than the normal control.[10] The toxin has set up changes in the physical state of the fat for which the name phanerosis has been proposed: the fat has been unmasked.

In the blood plasma fat appears to be, in part at least, in a state of subdivision too fine to be revealed by anything but the ultra-microscope. Ultra-microscopic particles have been described which are present in the plasma of animals, during the absorption of fat and at times when, as during the later stages of pregnancy, the transport of fat from the connective tissues is active; these particles are not visible at other times.

In observations such as these we have a series of gradations in the size of the fatty inclusions in cell protoplasm ranging from a drop that usurps almost the whole volume of a bulging cell to particles many hundred times smaller, less than 1 μ in diameter, and even by inference to particles smaller still, too small to take stain, or at any rate too small to be seen if they do. But in all the fat is enclosed in the cell fluid, more or less dispersed, more or less aggregated in it. We are led to speak of protoplasm as an emulsion of oily material in a watery medium sometimes too fine to be recognised, at other times more coarsely aggregated.

CELL MEMBRANE AND ITS PERMEABILITY.

That is one group of facts. The other is less objectively obvious and more inferential. It has gathered round the original observation of Hermann that the red blood corpuscles contain lecithine and cholesterol, and that solvents for these substances cause the hæmoglobin to escape from the corpuscles. Hans Meyer and Overton added other observations already referred to, and for nearly a quarter of a century there has been current a conception of cell protoplasm as enclosed in a fatty pellicle or lipoid membrane, which is the exact converse of the one that we have just been following out.

That an envelope with remarkable tenacity invests the red blood corpuscle is almost irresistibly conveyed by the moving photographs taken by Krogh and reproduced in his book on the "Physiology of the Capillaries." A frog's blood corpuscle is shown caught on the edge of the bifurcation of a vessel, which it rides like a sack of meal hung across a fence; later it can be seen gradually slipping over on to one side and then resuming its normal shape as it passes on. Almost all the facts of hæmolysis seem to require for their interpretation the existence of such a sac. This and the familiar behaviour of the red blood corpuscle to ether, chloroform, bile salts, saponine and soap solutions is the real reason for the acceptability of the theory of the lipoid membrane. Overton added to these his contributions on the permeability of cells in general: the surface membrane, he argued, must be of some lipoid material since the substances that could penetrate it were those which were soluble in lipoids. Ammonia, urea, acids like acetic, and basic dyes penetrate the cell membrane, and they are soluble in benzene and in substances that are like lipoids in that they will dissolve them; whereas sodium, sugar, amino acids, inorganic acids and salts, and acid dyes, which are not soluble in benzene, do not either penetrate. Hans Meyer's observations on the narcotic action of a variety of unrelated compounds which he found exerted their narcotic action in proportion to their partition-coefficient as between oil and water, were correlated with Overton's and interpreted as confirming them. Substances that will pass from water into oil will penetrate a lipoid membrane, and because certain substances suspend the activity of cells in proportion as they pass from water to oil they must be able to reach the cell because its surface is composed of material akin to oil; that was the implied argument.

This argument has been subjected to much criticism. The case of the dyes was specially taken up by Loewe, who showed that the dyes which penetrated the cell were not really soluble in lipoids; the proportion in which they are taken up by lipoids from watery solutions does not vary directly with the concentration of the solutions; proportionally more is taken up the weaker these are; in other words, it is not a case of partition between two rival solvents, but of adsorption, and if that is so a lipoid membrane would not account for the penetration of the dye into the enclosed aqueous protoplasm; it would, indeed, rather hinder it.

Moreover, the impermeablity of cells is not fixed and constant. For the life of cells it is essential that sugar, amino acids, even inorganic salts should be able to reach them. This is to some extent true even of the red blood corpuscle. A lipoid membrane characterised by unconditional impermeability to these substances would be fatal. Changes in permeability are in fact characteristic of the active cell. Excitation is accompanied by an increased permeability and the escape of ions which at other times are confined. The paralytic action of narcotic drugs is due to the fact that so far from increasing permeability, as solvents for a lipoid membrane would be expected to do, they diminish it. They paralyse because they prevent the increase of permeability that is inseparable from excitation. If they are present in fatal amounts then they do not merely narcotise the cell, but destroy all the properties alike which are characteristic of it when alive.

The lipoid membrane in the shape in which it was first propounded, perhaps in that in which it is still often thought of, is too crude to meet the requirements. Perhaps the simplest and not the least effective criticism of it is this. Almost every cell is and must be permeable to water: the lipoid membrane is by definition one that gives passage only to what is soluble in lipoids. It is difficult, of course, to say what is included and what is not included by the word lipoid, what the properties of lipoids are and what they are not. The term lipoid survives because it is convenient not to have to define it. Lipoids are apparently substances that have any of the properties of oil so long as they do not have them all. It may be unreasonable, therefore, to insist that the lipoid membrane ought to be impermeable to water; it is not unreasonable to expect some comment on the fact that it is always permeable to it. To say merely that the properties of lecithine are different from those of simple fats is not enough.

But the fact remains that the hæmoglobin is contained within the red blood corpuscle by something which behaves in many ways as if it were lipoid, had, that is to say, some of the properties of fat and not others. A considerable part of the stroma consists of lecithine at any rate, together with an amount of cholesterol that varies in different species of animals, and varies, too, directly with the power of resisting the lytic action of saponin against which cholesterol is known to give protection. The fact remains, too, that if these are the substances that contain the hæmoglobin within the corpuscle, lecithine and other compounds of fatty acids and also cholesterol are present in much larger quantities in other cells than in these, five or six times the amount, and that the permeability of other cells presents features of similarity with that of the red blood corpuscle. In fact the lipoid membrane remains, in some form.

FATTY AND OTHER CONSTITUENTS OF CELLS IN RELATION TO PROTOPLASMIC STRUCTURE.

These two contrasted groups of facts with regard to the physical relation of the fatty constituents of cell substance to the rest of its components, those pointing to the suspension of drops or droplets in a watery medium and those pointing to the cell contents being enclosed in a fatty pellicle, require to be brought into harmony with one another.

It is sometimes done in this way. Fatty substances sufficiently subdivided and dispersed in a watery medium are supposed to behave as if they formed a colloidal solution of the type described as emulsoid. It is characteristic of the most familiar of such solutions that they have a lower surface tension than the pure solvent, and that consequently the substance lowering surface tension is concentrated in the surface. All proteins so far as is known are concentrated in the surface of their solutions, in the case of some to such a degree as to form a coherent solid film there. It is accordingly common to suppose that fatty substances will be similarly concentrated in the surface of cells in which they are dispersed.

But an emulsoid solution according to the accepted idea consists of aggregates, which are so constructed as to contain some of the solvent, and which are dispersed in a continuum of the solvent containing some of the dispersed phase in true solution. The structure of the aggregates is not understood, but may be supposed to consist in the binding of molecules together by polar affinities in such a way as to leave interstices capable of accommodating relatively large quantities of water; a jelly may contain 98 per cent. of water. The solvent then permeates the interstices in these aggregates, where it must be supposed to be entangled so as to lose some of the freedom of an unencumbered liquid; but even in these interstices it is continuous with the surrounding body of fluid that has lost none of this freedom. This fluid outside the aggregates contains sparse molecules of the solute, which since they lower its surface tension tend to concentrate in the surface.

But fatty substances are immiscible with water. Emulsions of immiscible liquids are not the same as emulsoid solutions. They behave rather as suspensions of insoluble solids. The fact that two liquids are immiscible precludes the possibility of molecular dispersion. If a colloidal solution of one in the other is obtained that solution must be of the nature of a suspension, a suspensoid colloidal solution, quite different from the "hydrophile" emulsoid system. Moreover, the dispersion will be unstable and the droplets will tend to coalesce and run together; because whenever they come within a certain distance of one another, less than the diameter of the sphere of molecular attractions between the molecules of the solvent, the cohesive forces among these latter molecules will drive the globules into one another by pulling the solvent aside from between them. Such emulsions are stable only if there is some substance dissolved in the solvent that lowers its surface tension and concentrates on the interface. For two droplets of the emulsified liquid then to coalesce, the interfacial area must be diminished and some of the adsorbed molecules be driven back into the solution, and that is resisted by the cohesive forces between the molecules of the solvent.

It is true that fat droplets, as any foreign bodies or molecules which attract and are attracted by the molecules of water less than the molecules of water attract each other, will tend to be squeezed out on to the surface whenever they come within a certain distance of it, a distance less than the radius of the sphere of attractions between water molecules.

But to explain the formation of the membranes investing cells in this way is almost like supposing that the sea is kept within its bounds by the driftwood it washes up on to the shore. That which invests the surface of cells is too highly organised, has properties of specific permeability and impermeability far too delicately balanced to be the product merely of undiscriminating processes such as these. Moreover, a cell is an aqueous system surrounded by an aqueous system; to suppose that the limiting membrane is formed by adsorption at the interface begs the question; there is no continuous interface till the formation of a coherent membrane brings it into existence.

There is another way in which the coexistence of continuous membranes and dispersed aggregates may be understood which is based upon the observation of Bancroft and of Clowes.[11] Oil is easily emulsified in an aqueous solution of alkaline soaps. If these soaps are converted into the calcium soaps, which are insoluble in the water, but soluble in the oil, the drops of oil join up to form continuous layers enclosing the water. What was the dispersed phase becomes the continuous one, and vice versa. By inversion of phases the emulsion becomes one of water in oil. It is thought that in the unhomogeneous system of the cell there may be at the surface an emulsion of this description, of water in oil in some parts or at some times, and in other parts or at other times possibly one of oil in water.

Some shadow of support for such a conception is perhaps suggested by the well-known facts as to the influence of calcium and of sodium on the permeability of cells. A tissue of cells has a low conductivity for electric currents. The ions that could conduct are confined within the impermeable cell membranes and by this restriction of their movements are prevented from conducting the current. For this normal impermeable condition of membranes calcium has to be present; the same tissue acquires the power of conducting, allows, that is, freer passage to the ions, when by means of solutions of sodium salts free from calcium the normal proportion between sodium and calcium ions in the surface is disturbed; and the normal state of the surface membrane can then be restored when a proper proportion of calcium is added to the solution.

As a result of this review of current conceptions as to the relation between the fatty and other constituents of cells in the structure of their protoplasm, I think it must be admitted that there is room for further work and for data obtained in other ways. Some such data have begun to be available, and I propose to inquire how far they may be helpful.

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An Address

ON

ARTHRITIS IN CHILDHOOD.

Delivered at the Children's Hospital, Feb. 26th, 1925,

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ARTHRITIS occurring in childhood presents various aspects of interest, and is an admirable introduction to the more complex problem of arthritis in adult life. We must recognise that the joints reach great perfection in childhood, and no one can see their wonderful mobility and, if middle-aged, recognise the loss of that advantage without being convinced of this fact. High efficiency means healthy structure, and this in turn is usually resistant to disease. Be that as it may, in this hospital, apart from tuberculosis, a severe arthritis is comparatively infrequent, and those who have studied it at all ages must be struck by the absence in the young of those degenerative factors which make this condition in the elderly often so crippling, as is exemplified by osteo-arthritis of the hip-joint.

In adult life we are continually in perplexity as to how much importance should be attached to metabolic faults, nerve degeneration, and traumatic factors. On the other hand, in both young and old, the "local focus" is now to the fore, but it is remarkable how often in adult rheumatoid arthritis we fail to detect any convincing evidence of a local focus, however much we may suspect its presence.

In childhood, with few exceptions, we can clearly trace the factor of infection. It is sufficient for me to recall to memory tuberculous, rheumatic, syphilitic, and gonococcal arthritis, influenzal, pneumococcal, meningococcal, and typhoid arthritis, and the septic staphylococcal and streptococcal forms. There are, nevertheless, as in the adult some mysterious cases, variously termed Still's disease or rheumatoid arthritis, and some remarkable examples of osteo-arthritis. But we cannot but feel, when we consider the cases of Still's disease, that they must also be infective in origin when we recall the fever, the enlarged glands and spleen, the sweating, and general toxæmia.

From this broad survey we learn some useful lessons. Almost every example I have just quoted is an instance of one manifestation of a general disease, and if we can hope to solve such a problem as the pathology of arthritis it must be from a study of all the other manifestations of these causal diseases, any one of which may throw a side light on the difficulties of the particular symptom "arthritis." This warns us against a *too narrow specialism*. Then, seeing the importance of infection in the arthritis of childhood, we can in these young children learn much about the results of such infections without complicating our survey, as in the adult, with degenerative and other secondary factors. Though, however, we must be on guard against too narrow a specialism, there can be no doubt that the detailed study of the structures involved in an arthritis is essential. This will include the synovial membranes, the cartilages, the bones, ligaments and capsules, the circulation and nervous supply, the tendons, bursæ, and the skin itself. In the child, too, we must remember also the epiphyses, for otherwise we may mistake an osteo-myelitis for a primary arthritis.

I will give some illustrations of the importance of this detailed study. A child may suffer much pain with no obvious swelling of the joints, the cause lying in the tendons around or in the nerves supplying the articulation; this is not infrequent in acute rheumatism. On the other hand, we sometimes find in acute rheumatism both knee-joints distended with fluid, and yet the child does not complain of pain. In other cases spasm of the powerful hamstring muscles may produce in the course of a stubborn but not necessarily crippling arthritis of the knee-joint early flexion. Almost before we are alive to the danger we may find ourselves confronted with the problem of correcting this flexion, for otherwise there will follow adhesions, and then the child will have to endure the trial of such painful manipulations as may be necessary to break them down. In the destructive forms of arthritis the erosion of the internal ligaments of the knee-joints may lead to backward dislocation or, more distressing still, insufficient care with manipulative movements may precipitate this result by actually tearing them. I need not dwell upon the recognition of "starting" pains, or the presence of abscesses in connexion with the joints. There are also rare and curious cases of chronic arthritis associated with sclerodermia, in which the closest attention has to be directed to the skin over the affected elbow-joints, which may become as thin as tissue-paper, and then liable to ulcerate and cause troublesome sores.

TUBERCULOUS ARTHRITIS.

It would be unnecessary for me to give a description of the classical tuberculous arthritis, but I will touch upon some of the more unusual results.

Poncet, in 1897, described a "tuberculous rheumatism," meaning by this an arthritis which closely resembled in its features rheumatoid arthritis.

Since the date of that paper I have been always on the watch for such cases. That acute tuberculous polyarthritis may occur in children is certain, and you may easily mistake it for acute rheumatism, but as I have seen on more than one occasion the child may die of tuberculous meningitis. It has been suggested that the chronic arthritis of the Still type is tuberculous, but all our evidence here I believe, including the necropsies, appears to negative this, and in the considerable number that I have seen I have never detected a tuberculous origin. The tuberculous rheumatism described by Poncet accordingly appears to be a rare occurrence, though I am quite prepared to admit that this is only a local experience. Dr. L. Findlay, in 1920, published three cases, one of them dying of tuberculous meningitis.[1] Mr. Lusné reported in Paris a case of an infant of 13 months with rheumatoid arthritis and a positive von Pirquet reaction, who died at the age of 3 years from tuberculous meningitis, and both of whose parents were consumptive. Accordingly at present I keep an open mind upon the frequency of "tuberculous rheumatism."

If "tuberculous arthritis" may be mistaken for the rheumatic, so sometimes may the rheumatic be mistaken for the tuberculous. I have seen a boy who had been put on his back in a Phelps's box for two years on account of a suspected spinal caries. It was, as a matter of fact, a rheumatic arthritis of the cervical spine. Although he had been kept at complete rest during this time he suffered from two attacks of rheumatic heart disease, the second being a severe pericarditis with much valvular damage. A rheumatic stiff neck may give trouble for weeks, although we associate it as a rule with a sudden onset, much pain, and swift recovery.

STILL'S DISEASE.

I come next to Still's disease, and call it by that name because I think it will define the particular group as it was first described by my colleague. I was fortunate to see many of the original cases upon which his classical paper was based.

The chief characteristics are: (1) An onset which is almost always before the second dentition. (2) The female sex is more often affected than the male. (3) The cause is unknown. One factor which has attracted me is the fact that several of my cases have come from low-lying and damp situations. (4) The articulations, apart from the thickened and vascular synovial membranes and ligaments, show little change. In some long-standing cases the synovial membrane has eroded small pits in the periphery of the cartilages, and there may be some fibrous adhesions, but there are no osteophytes, and there is no eburnation of the bones. The pitting of the cartilage by adherence of the synovial membranes resembles precisely the condition I have seen in experimental arthritis produced by the intravenous injection of streptococci. (5) The lymphatic glands and spleen, which are enlarged, show little change in structure, though there may be small hæmorrhages.

I have myself only seen one case from its very commencement, and I give a few details of this illness because they are of interest.

L. B. M. was admitted on August 2nd, 1923, for difficulty of breathing and pains all over the body which, with fever, had been present for three weeks. There were also night sweats and anorexia, and swelling of the wrist-joints. There was no family history of rheumatism. The child was pale and fretful. The lymphatic glands and spleen were palpable, the wrist-joints were swollen, and the temperature 100° F. The heart was enlarged, but there was no valvular disease. The count of the white blood-corpuscles was 75,500 per c.mm. The temperature remained raised for two months, and the feet and ankles became affected; later the knees also became swollen and the neck very stiff. In January, 1924, he had some bronchitis.

One can hardly doubt that this must have been an infective process, and the quick breathing at first raised the suspicion of broncho-pneumonia, but this never developed.

As a rule the onset of the disease is gradual, with stiffness of some of the joints as an early symptom. The knees, the wrists, and the cervical spine are first affected, and the changes involve the capsules of the joints and not the bones; and there is but little fluid exudation and that viscous and clear. The hands and fingers are soon implicated, and the ankles and feet may also soon be attacked. The child has outbursts of pain such as occur in the rheumatoid arthritis of adults. This disease is polyarticular and remarkably symmetrical in its distribution, with great tendency to early contractures and rigidity. The lymphatic glands are enlarged in association with the joints that are affected; they are not, as a rule, tender and never suppurate, but they may reach a considerable size, and even in some cases can be demonstrated in a photograph. The spleen may extend one or two inches below the costal arch but, as it tends to shrink again in the quiescent stage, this enlargement must be sought for during the more acute phase. Valvular lesions are not found, but in a few cases a film-like pericarditis and pleurisy have been discovered after death. There may be some exophthalmos and occasionally jaundice, and the temperature in severe cases is high and swinging between 100° and 104° F., and then the child may have severe sweatings and be extremely ill.

One of the most distressing features is the painful stiffness of the neck; as a result of this there may be noticed a striking over-action of the frontalis muscle when the child looks upwards. The course of the disease is marked by periodical outbursts of activity. Some of these children have bad teeth, others nasal discharges, but although treatment for such should at once be carried out I must confess that I have seen little direct result from these steps.

In common with other observers I have met with a considerable number of cases that do not coincide with the classical description, but which nevertheless show certain features that lead one to include them in this group. Some of these have been remarkable, and one in particular impressed itself on my memory.

This was a boy who showed an arthritis and fever with enlarged glands, but no splenic enlargement was discovered. The course of the disease in hospital was so disastrous that the parents removed the boy in disgust. For a year I saw nothing of him, but one day the father brought him up to my out-patient department. He had made a marvellous recovery, although his knees, elbows, and neck were stiff. This improvement had commenced about three months after leaving the hospital, and the only medical treatment had been cod-liver oil. I saw him once more six months later when he was again very ill. His chin now nearly touched his sternum and this is the remarkable feature: his heart was greatly enlarged, and there was a loud systolic mitral murmur and an enlarged liver with dropsy and pulmonary œdema. His parents would not leave him, and I had little doubt he died from cardiac failure, but the war supervening I lost sight of him.

Other cases in turn may show no enlargement of the glands, but the arthritic condition resembles that of Still's disease. I have made, over a good many years, with skilled assistance bacteriological examinations of several of these cases. The arthritic exudations, the blood, and in some cases the lymphatic glands, have been removed during life. The results have either been negative or, if micrococci had been isolated, they have not been demonstrated, or reproduced the disease. The fluid obtained from such joints has been in my cases scanty and viscous. The lymphatic glands, as we must remember, are not destroyed by the disease, and one suspects that the infective agent if it is present in them is taken up by the tissue cells, and one feels that unless an exactly suitable culture medium were used that they would be unlikely to survive their transference to the altered surroundings. All the examinations of the blood have been negative, though there may be an increase in the number of polymorphonuclear leucocytes.

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[1] L. Findlay: Glasgow Med. Jour., 1920, i., 241.

OSTEO-ARTHRITIS.

Osteo-arthritis in childhood—by which I mean a chronic arthritis with hypertrophic changes in the synovial membranes, ulceration of the cartilages and osteophytic formation leading to bony thickenings and out-growth—is a very rare occurrence in the hospital, and, though of much interest, a subject upon which it is difficult to obtain information. In adult life it is the general experience that this form of arthritis usually commences later than the rheumatoid, and if we couple this with its apparent rarity in childhood it leads one to suspect that degenerative changes must be a factor in its development.

One of the most instructive cases of this type was shown by Mr. P. Turner in 1908 at the Society of Study for Disease of Children.

This was a girl of 10, both of whose knee-joints were distended with fluid, and thickened synovial membrane which, on each side of the patella, could be rolled under the fingers. There was slight grating on flexion of the knee-joints, and the ends of the bones appeared to be thickened. The wrist-joints and the first interphalangeal joints were also affected. There was this unusual feature, the absence of pain. That the lesions were osteo-arthritic in type was undoubted, but it was not absolutely clear that the cause was not syphilitic or tuberculous.

In my experience it is not a very rare event in a severe chronic arthritis in childhood to find spindle-shaped swelling of the fingers, Heberden's nodes, and some grating on movement of the interphalangeal joints. In 1919 Dr. R. Armstrong described such an occurrence in a boy of 12 years and his sister of 11. In the boy's case the illness had commenced at 4 years of age, and in 1918 there was a rheumatic attack with swelling of the ankles and knees. Dr. Armstrong had plotted out a pedigree showing the familial nature of this disorder, and as no local focus was apparent inclined to the explanation of the condition as one of a pure degeneration. Others were in agreement with him, but I am not yet prepared to go further than to accept a tissue tendency to some rheumatic infection. When you recall what I have already said of osteo-arthritis in the adult you will appreciate the interest there is in finding the term "degeneration" appearing in the pathology of the condition in childhood.

Mr. L. Barrington-Ward, in THE LANCET (1912, i., 157) under the title of Double Coxa Vara with other Deformities occurring in brother and sister, described two remarkable cases which I had seen myself on one occasion. The diagnosis raised such questions as Still's disease, osteo-arthritis, congenital syphilis, achondroplasia, and congenital abnormalities.

PNEUMOCOCCAL ARTHRITIS.

Passing now to pneumococcal arthritis, this again would appear to be in our medical wards a very rare event, and perhaps this is somewhat surprising, for about 70 per cent. of such cases are associated with pneumonia. It is needless to say that we get many cases of pneumonia and broncho-pneumonia, and we also get empyema and more rarely suppurative meningitis and pericarditis of pneumococcal origin. If we had cases of suppurative and non-suppurative arthritis complicating our cases of pneumonia I believe we should note them. Yet I cannot recall one case during my five years' tenure of the wards. That some of the mysterious cases of arthritis I have associated in my mind with Still's disease were due to pneumococcal infection is possible, but none of them has been ushered in to my knowledge by a frank pneumonia. As I shall mention later, there have been five examples of this arthritis occurring in surgical wards which have been accurately determined by culture. Three of these occurred in infancy, but none commenced with a pneumonia but appeared to be incidents in a general infection. As a rule one joint is attacked, and the order of frequency is the knee, the shoulder, the hip, the wrist, the ankle, the elbow, and the sterno-clavicular joint. The proportion of suppurative to serous cases is about 10 to 1.

Dr. Cave, of Bath, was the first in this country to demonstrate the exact nature of this form of arthritis, and his paper interested me at that time (1901) because then, when working at rheumatism Dr. A. Paine had isolated the pneumococcus from a doubtful case of arthritis, and this enabled us to recognise at once the importance of Dr. Cave's observations.

BACTERIOLOGICAL INVESTIGATIONS OF ARTHRITIS.
By DR. D. NABARRO.

At this point it will be convenient to give some interesting details on the bacteriology of arthritis, for which I am indebted to Dr. Nabarro from the Research Department of the Hospital for Sick Children. They are concerned with the result of the examination of the exudations obtained from the joints of 108 cases of arthritis between 1917 and 1924.

In 54 of these the tubercle bacillus was found, or the case on clinical and cytological grounds was most probably tuberculous. Fifty-four were non-tuberculous.

In 21, streptococci were isolated and grown.
" 11, staphylococci " " "
" 11, the exudation was sterile.
" 5, the pneumococcus was isolated and grown.
" 3, the influenza bacillus " " "
" 1, staphylococci and streptococci were isolated and grown.
" 1, the *Staphylococcus albus* and *citreus* were found.
" 1, a Gram-negative bacillus (unidentified) was found.

You will see from these numbers—only five examples in seven years—how rarely the pneumococcus has been isolated from the joints of children under 12 years. That there have been some examples in which examination was not made is quite possible.

The age incidence of the non-tuberculous cases was as follows. There were 40 records, some of the 54 cases having been twice investigated.

17 were under the age of 1 years.
8 were from 1 to 2 years of age.
3 " " 2 to 3 " "
2 " " 3 to 4 " "
4 " " 4 to 5 " "
5 " " 5 to 6 " "
3 " " 6 to 7 " "
5 " " 7 to 8 " "
0 " " 8 to 9 " "
1 " " 9 to 10 " "
1 " " 10 to 11 " "
0 " " 11 to 12 " "

More than half these cases, it will be seen, were under 2 years of age. Eleven were streptococcal and five staphylococcal, three pneumococcal, three influenzal, two were sterile, and one was possibly gonococcal, but the report was doubtful. It is interesting to find that there was not a single case of meningococcal arthritis.

GONOCOCCAL ARTHRITIS.

Gonococcal arthritis is a very rare experience here, and only one doubtful case is recorded by Dr. Nabarro. Clement Lucas, in 1885, described its occurrence in infancy in a case which was of considerable interest, because then the bacteriological features were not known. Nevertheless the case was a convincing one because the mother had been infected 14 days before confinement, and there was acute vaginitis. Her husband was under treatment at the time. The infant on the second day had severe conjunctivitis, and about the fourteenth day developed arthritis of the left knee and the left wrist. The ophthalmia was treated and the arthritis gradually subsided under treatment which was of the simplest. Without the application of a splint or giving of medicine a cooling lotion was sufficient to bring about a good recovery.

CONGENITAL SYPHILIS.

As is well known, congenital syphilis frequently affects the bones and cartilages and may also cause arthritis. The osteo-periostitis of infancy (one of the causes of pseudo-paralysis) is essentially an *epiphysitis with periostitis* of varying degree. Radiography demonstrates these lesions very clearly. The joints themselves in the neighbourhood of the epiphyses may be implicated and the synovial membranes swollen.

Equally characteristic, but not so often seen here, is the arthritis that occurs in older children. This we associate with such other late congenital lesions as Hutchinson's teeth, interstitial keratitis, and deafness. In some cases there may be an acute synovitis with fever, pain, and swelling; in other cases an osteo-arthritis with destruction of cartilage and bone, and the formation of osteophytes. The best defined cases are those in which both knee-joints are attacked and show large, puffy, almost painless swellings which fail to react to any treatment until the true cause is discovered. The diagnosis from tuberculous arthritis may be difficult, but the other stigmata of the disease and the blood reaction usually give the key to the solution.

INFLUENZAL ARTHRITIS.

As recently as October, 1924, Dr. Nabarro and Mr. J. F. H. Stallman[2] published a record of three cases of influenzal arthritis occurring in infancy. To those who are interested in the arthritis of adult life these exact records must be valuable, for they will recall how often in cases of rheumatoid arthritis a serious advance in the disease may follow an attack of severe influenza. Here we have proof that the influenzal infection itself may attack the joints of children. In these three infants the arthritis affected in each case the knee-joint. The exudations were purulent and the Gram-negative bacilli were present in numbers and were both extra- and intra-cellular. Two of the cases recovered and the final results were good. One died of influenzal meningitis, but the arthritis in this case also was running a favourable course. The writers, however, point out that in some of the recorded cases there has been total disorganisation of the joints affected. The treatment of these three cases was surgical.

ARTHRITIS AND MUMPS.

From time to time when investigating the history of acute rheumatism in childhood I have come upon a certain number of cases of heart disease which have been dated from an attack of mumps. I have never had the opportunity of tracing the development of this heart disease, and though I have heard of cases of arthritis following mumps I have never actually seen the condition. However, in THE LANCET of Jan. 10th, 1925, p. 86, there is an abstract from a thesis by Dr. P. Maisondieu upon this subject. He calculates the frequency of its occurrence at just under 0·5 per cent. It is usually a late manifestation, commencing about 11 days after the disappearance of the parotitis, and it may synchronise with an attack of orchitis. The distribution is as a rule monarticular, thence spreading sometimes from one joint to another. There may be much pain and swelling, or again there may be pain in several joints but no swelling. Suppuration is the exception. The temperature may be slightly raised and the duration of a prolonged attack extend over five or six weeks.

HÆMOPHILIC ARTHRITIS.

Hæmophilic arthritis is very uncommon in the medical wards, but I have seen a few severe examples and they present some striking features. One of the most obvious is the acute onset with intense pain; another is the remarkable recovery that may occur in the joints, which again and again seem as it were to rebound from the sudden injury to their structure. Nevertheless we find that there will eventually arise an increasing disability, at first from stiffness, later from more serious damage of the type of an osteo-arthritis as many years ago Sir Anthony Bowlby pointed out to us. The knees are the joints most often attacked and eventually severe crippling and ankylosis result.

Another interesting point is the periodicity of the attacks. Possibly you may be under the impression that the hæmorrhages in these cases are invariably the result of some injury. We must admit that it is difficult to exclude this possibility, but the strange feature is that a definite injury may at one time of the year produce no effect, when at another, as a result of the slightest slip or twist or indeed without any remembered event of this kind, a severe effusion may develop. This is one of the terrors of the disease, for the patient lives as it were with the sword of Damocles suspended over his head. Parents will tell you of certain warnings which show that the mysterious change in the blood is developing: they will tell you of nervousness, irritability, and languor, of headaches, and even of uncomfortable sensations of tenseness in the joints. It is remarkable in the history of blood disorders how often we meet with this periodicity, and you need only recall the rise and wane of leukæmias, of lymphadenoma, of anæmia gravis, and purpura hæmorrhagica as striking instances. The occurrence of high fever and pericarditis during one of these attacks as I have seen leads one to speculate whether an infection, possibly even that of an ordinary cold, may not originate these hæmorrhages by producing the mysterious change in the blood which causes the bleeding.

As a rule the diagnosis is not difficult, for we have so frequently a previous history of bleeding either in the patient or in his forbears, and the intense rapidity of the onset, the pain, and the discoloration of the skin round the joint usually also guide us aright.

The treatment is difficult, and many remedies have been used. Calcium lactate combined with magnesium carbonate in 20 gr. doses are sometimes given an hour before meals. Dr. Lovell Gulland has found fresh serum most useful. Horse serum may be used either by the mouth or intravenously in 10 c.cm. doses. The ordinary horse serum which you obtain from manufacturing chemists is of value, and Dr. Gulland has found that the effect lasts about a month and has used with good result prophylactic doses given once every four weeks. You may speculate as to the danger of anaphylaxis, but in his experience the risk is slight, and can be obviated by a small preliminary injection when from the time interval you suspect this danger.

ARTHRITIS AND SCLERODERMIA.

There is a very unusual form of arthritis met with in children and young adolescents which is associated with sclerodermia and Raynaud phenomena. The appearances of these cases is remarkable, for their skin is like leather and cannot be picked up from the hardened and atrophied muscles below. The trunk and the extremities may be affected and the articulations are stiff from the induration of their ligaments; the hands and feet appear withered, and attacks of cyanosis may occur accompanied by acute pain. Over the elbows the skin becomes reddened and so thin that the bones seem ready to break through. To a lesser degree there is the same appearance over the knee-joints. In some instances the skin over the elbows shows a chronic dermatitis and, giving way, fissures form which are very slow in healing.

The usual history of these cases is that there have been attacks of arthritis—or as they are termed "rheumatism"—and that these have gradually increased in gravity and duration. I have never myself seen a case in which the joints have shown any effusion, but they have been invariably stiff and shrunken and the skin over them shiny and a dull-red colour. As you may imagine, the treatment is most discouraging. Some improvement has been obtained with iodolysin combined with local treatment by radiant heat and inunction of oil, and together with these are combined skilled massage and manipulation. I have also seen psoriasis associated with these cases which has interested me, because I have noticed that this skin disease in the young not infrequently occurs in rheumatic cases that are subacute and liable to show unusual features.

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[2] THE LANCET, 1924, ii., 743.

Raynaud phenomena are not confined to these rare cases, but in adult life may be met with in rheumatoid arthritis, and in a paper on "spasmodic symptoms in rheumatism" I have described their occurrence in the acute rheumatism of childhood. In such cases there has been an obvious attack of acute rheumatism with arthritis and valvular disease, and then some months or even a year later the hands and forearms may show the characteristic sudden cyanosis accompanied by intense pain. In these cases the condition has yielded to electrical treatment and massage, together with precautions against undue exposure to cold.

MYSTERIOUS ARTHRITIS.

There remain some mysterious cases of arthritis which are to me most perplexing, and I have been glad to find that my colleague, Mr. H. A. T. Fairbank, in his wide experience, has met with the same difficulty. It is in connexion with the hip-joint that I have met with these particulars. This, for example, is an instance:—

A rapidly growing boy of 11 years fell in a football scrummage with his right leg strongly abducted. At the time he had pain, but this passed off and remained absent for the rest of the day and during the night. The next day he had to stand in the train for a long time, and when walking in the afternoon began to feel discomfort in the joint. That night he woke with severe pain and his temperature was 102° F. Next day there was fullness over the hip-joint and great pain on movement. In this case there was no evidence of acute rheumatism, and the immediate fear was an acute epiphysitis. The late Mr. T. H. Kellock saw him with me in consultation and advised the policy of rest with close supervision, and agreed that there was an acute arthritis. The symptoms subsided and the temperature dropped slowly to normal, and a perfect recovery resulted.

Mr. Kellock at the time told me that he had seen several similar cases in growing boys. Such a condition as this coming on when an interval of time has elapsed after the probable injury—an interval during which there has been no apparent evidence from pain or limping of a direct reaction to injury—is always disquieting, and particularly if with the onset of the pain the boy, as in this case, looks ill and has definite fever. The possibility of an acute osteo-myelitis of the head of the femur must be a cause of great anxiety. There are, however, other cases of mysterious arthritis of the hip-joint with no history of injury. These may occur even in infancy, and if one can judge from their course are apparently not tuberculous in nature. Even if their course is not always favourable but leads to a destruction of the cartilage and erosion of the bones, still it does not resemble that of tuberculosis, but more closely the condition which we associate in adults with acute osteo-arthritis.

TREATMENT.

The treatment of arthritis in childhood rarely presents any special features from the medical aspect. Rheumatic arthritis is frequent, but with rest the rapid subsidence is remarkable, and we all know the value of the salicylate compounds for this symptom.

The problem in Still's disease is far different. Every sort of drug and treatment has been tried, but no one can claim any certain remedy. I think we should all agree that septic foci should receive treatment, but there has been no convincing evidence in my cases that as a result the disease has relented. On the other hand, I am certain that the milder forms with persistent treatment and careful nursing make very considerable improvement. At one time soured milk seemed to do good. Intestinal disinfectants, such as small doses of calomel or β-naphthol and such like, have never appeared to me to have any clearly defined success, and the same applies to renal disinfectants and vaccines. I have previously insisted on the importance of such an individual being rescued from damp and cold surroundings. How such surroundings alter the chemical processes of the human body I do not understand. But I believe that they so damage the connective tissue skeleton that an infection not necessarily massive or continuously supplied from a local focus and not necessarily of a peculiar virulence can produce profound disturbances which cannot be rectified because the power of resistance is deficient and the infection itself not destroyed. Of local remedies I have seen some benefit from the treatment by ultra-violet rays. There can, however, be little doubt, I think, that we are in the same difficulty with this disease as with the rheumatoid arthritis of adults.

A YEAR'S EXPERIENCE OF INSULIN.*

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THIS paper gives a brief report of the results obtained in the treatment of diabetes with insulin, in Dr. Cowan's wards, during the year March, 1923, to March, 1924. During this year 49 patients were admitted for treatment, and Table I. shows the age and sex incidence, and mortality among these cases:—

TABLE I.—*Incidence and Mortality.*

Age.	Male.	Deaths (to date).	Female.	Deaths.
1– 9	2	—	—	—
10–19	5	1	2	1
20–29	3	—	5	—
30–39	6	—	4	2
40–49	6	—	3	—
50–59	2	—	4	—
60–69	2	—	3	—
70–79	1	—	1	—
Total ..	27	1	22	3

Forty-nine cases, of whom four were dead before March 1st, 1924.

All were suffering from glycosuria, but the significance of this symptom varied as shown in Table IA.

TABLE IA.—*Variation in Incidence of Glycosuria.*

—	Male.	Female.	Total.
"Renal" cases	—	2	2
"Lag" cases	2	—	2
Not diabetic	2	3	5
Diabetic, but not suffering from diabetes	2	5	7
Diabetic, and suffering from diabetes	21	12	33

Diagnosis.

With regard to diagnosis, there is very general agreement that, particularly in the selection of cases for insulin, it is essential to discover whether or not one is dealing with a case of true diabetes. The method adopted to differentiate in doubtful cases was the "glucose test." Urinary analysis following the ingestion of glucose or other carbohydrate is not conclusive, though the presence of a trace of sugar in the urine after, say, 25 g. of glucose, unaltered in amount after 150 g. glucose, would certainly be very suggestive of a non-diabetic glycosuria; but by the glucose test only can a proper distinction be made with fair certainty. The two "renals" and two "lags" in this series were tested in this manner as were also the milder diabetics. In the more severe diabetics such a test was, of course, unnecessary. The results obtained from these and numerous other observations would seem to show that the information obtained from the glucose test is reliable in the great majority of cases, but the following cases are worthy of attention :—

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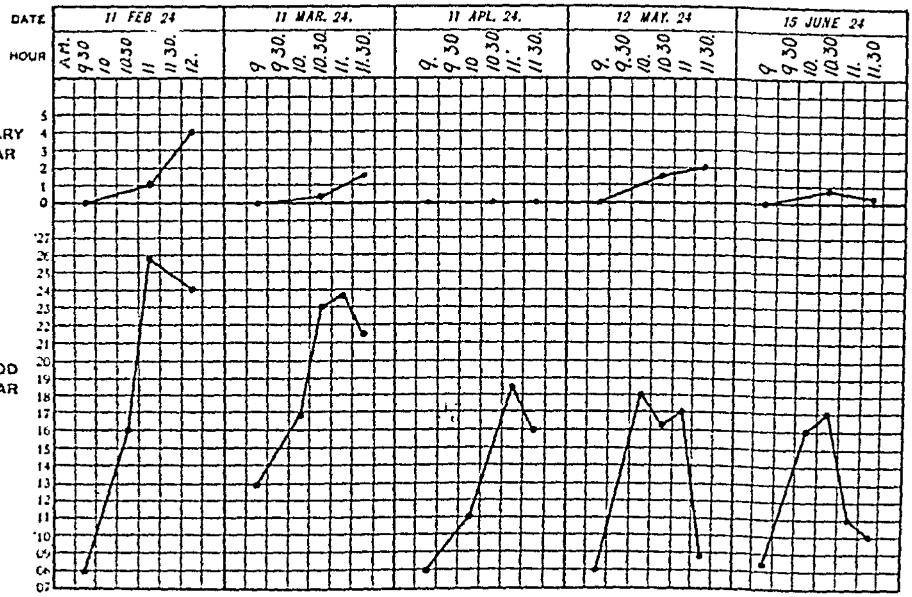
* The expenses of this investigation were borne by the Medical Research Council and by a grant from a fund raised by Jas. Macfarlane, LL.D.

CASE 1.—M. L., a well-nourished girl of 15, was admitted on Feb. 5th, 1924, complaining of thirst and polyuria, which had come on suddenly three weeks before. She had been employed for six months in a baker's shop, and had eaten sweetened cakes in large numbers during that time. The family history was negative. The urine contained 3 per cent. sugar. Glucose tests were performed, as shown in Chart 1. The first test was made after a brief period of starvation, but from that time onward the diet remained constant at C. 80, P. 60, F. 120. The first and second glucose tests gave typical diabetic curves with urinary sugar results to correspond. The fourth and last tests give curves which, with the urinary sugar observations, would suggest a renal glycosuria.

CHART 1.



All tests were made in the early morning before any food had been taken.

CASE 2.—J. D., a boy, aged 6, was admitted to the wards on Sept. 7th, 1922, complaining of headache, thirst, and frequency of micturition of some 2½ months' duration. While in hospital there was never more than a trace of sugar in the urine, and his blood-sugar, with one exception, never exceeded 0·15 per cent. Chart 2 shows the result of a glucose test at this time. The first curve might be called a "lag," though no sugar was detected in the urine. Certainly the return of the blood-sugar to normal in 1½ hours is satisfactory. Less than a year later he was readmitted to hospital, and now insulin was necessary to keep the urine sugar-free. Curves 2 and 3 show the results of glucose tests at this time, and are clearly diabetic. The boy had not been kept on strict diet during the intervening period.

It would thus seem clear that it is dangerous to rely entirely upon the result of a *single* glucose test. Two or three observations should be made at intervals of some weeks, particularly in doubtful cases.

Treatment.

In view of the possibility of error, as shown in the results given above, the "renal" and "lag" cases were advised to refrain from obvious sugar, but no other limitation was placed upon their diet. The "not diabetic" cases, five in number, were patients admitted for treatment of some quite different disability in whom a glycosuria was discovered on routine examination of the urine. Three were old arterio-sclerotics; one man suffered from locomotor ataxia; and one was a woman of 17 with bronchitis, and a coli infection of the urinary tract. In all five the morning blood-sugar reading was normal. In these cases the glycosuria was transient, and disappeared quickly on a slightly modified carbohydrate diet with no severe restrictions. All these cases were instructed to return for observation, and many have been re-examined at an interval of three or four months to confirm the correctness of the diagnosis. The seven diabetics who showed no symptoms of diabetes save glycosuria were treated on the usual Allen lines, and all left hospital sugar-free on an adequate diet. It might be mentioned with regard to the "Allen" diets employed, that protein and fat were never so restricted as recommended in the earlier "Allen" treatment, the object being to render the patient's stay in hospital as brief as possible. Later, following the work of Newburgh and Marsh, most diet schemes have been modified in a similar manner—with perhaps a rather lower protein content—thus confirming the wisdom of the practice which we had adopted from a practical standpoint.

Of the patients who were suffering from diabetes two males and one female did not require insulin. Thirty of the 33 patients suffering from diabetes required treatment with insulin. Of these, 11 were given insulin at once on admission to hospital. These cases fall into two categories: (1) acid cases; (2) cases showing much emaciation, frequently with signs of cardiac failure.

(1) Eight cases showed severe acidosis. The first essential in these cases is to eliminate the acidosis, and to this end insulin was given in large amount together with a diet containing a considerable amount of carbohydrate. The largest dosage of insulin required in these cases was 70 units in the 24 hours, but in most cases 10–30 units in the 24 hours was sufficient. (Chart 3.) Various diets were experimented with, but an oatmeal diet with insulin appeared undoubtedly to be the most efficacious in rapidly clearing up the acidosis. The "oatmeal diet" employed was similar to that of Van Noorden save that eggs and butter were omitted; 300 g. of oatmeal were soaked in 3000 c.cm. of water, strained, then boiled for ten minutes, and 300 c.cm. of the resulting gruel were given two-hourly. The value of this diet was approximately C. 60, P. 12, F. 12. Opinion is divided as regards the advisability of giving sugar in these cases, and, as MacLean has pointed out, *the blood-sugar is invariably* so high that further carbohydrate seems contra-indicated. Despite this fact we have always given a certain amount of carbohydrate in all such cases, with, of course, a minimum of fat.

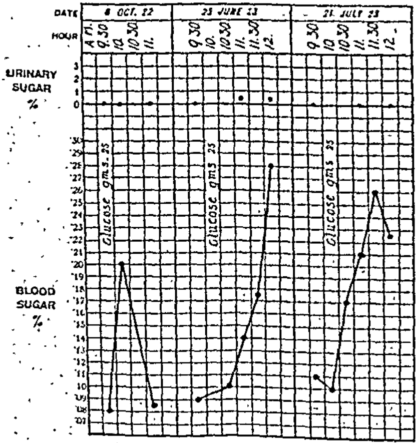
(2) Three cases were so emaciated as to make immediate feeding necessary. In these cases the patient was placed at once upon a calculated adequate diet with insulin cautiously added until the urine became sugar-free. When necessary cardiac stimulants, digitalis, caffeine, &c., were employed. (Chart 4.) The remaining diabetics (22 in number) all commenced treatment on the usual dietetic lines, and every

endeavour was made to treat without insulin. The necessity for such a procedure is obvious in hospital cases, and particularly in the earlier days when insulin was expensive and no provision had been made for obtaining it outside. In three patients only were we successful, but it must be remembered in this connexion that the majority of the cases were severe, and many were cases in which we had had little success on previous admissions. In the others the optimum diet was found, and this proving insufficient for the patients' needs, gradual advances were made with the careful administration of insulin. The first method adopted to gauge the dose of insulin was to give a small dose of insulin followed by a "fixed meal," the food value of which was C. 20, P. 18, F. 25. Blood-sugar estimations were made before the meal and at hourly intervals thereafter for four hours, while the urine was obtained two hours and four hours p.c. By this means we hoped to avoid a hypoglycæmic reaction, and also to correlate the blood and urinary sugar findings with a view to dispensing with the blood-sugar analysis. As expected, we found that while sugar remained in the urine blood-sugar estimations could be omitted, but when the urine became sugar-free they were essential.

The "fixed meal" was incorporated in the diet of the patient once or more often in the day as might be necessary. With further experience the "fixed meal" was dropped, and meals of any type containing the bulk of the day's carbohydrate ration were substituted.

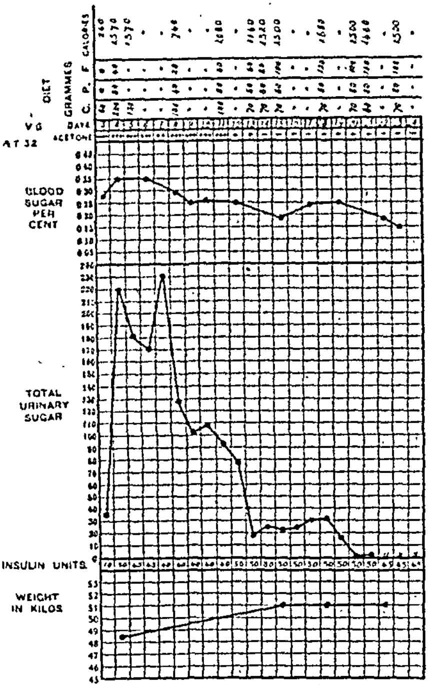
In the earlier cases blood-sugar estimations were made very frequently as explained above. Gradually the number of estimations was reduced until observations were made only in the morning and four hours after each dose of insulin, a method which we still adopt in the earlier stages of all cases while the dosage is being regulated. Later on in treatment a blood-sugar estimation was done in the morning twice a week, and the urine was tested about noon and in the late evening for sugar. In all cases the 24-hour urine was carefully collected and its sugar content measured. Any discrepancy between this result and the noon and evening results was noted, and the necessary adjustments—e.g., increase in the size or number of doses of insulin, or transference of carbohydrate from one meal to another—were made accordingly.

CHART 2.



Speaking generally, treatment followed two lines. The first was that advocated especially by Graham in which the blood-sugar was kept within normal limits with a minimum of insulin and of carbohydrate. Particular attention was paid to a normal pre-breakfast blood-sugar. Undoubtedly this was a most satisfactory method of treatment; and an endeavour was made to treat the early cases, and the young, on these lines. As the blood and urinary sugars are more readily controlled in such cases the majority could be so treated. This method, however, demanded a rather long residence in hospital, while the diets on dismissal were generally inadequate for the more or less heavy work which these patients had to perform. Thus, in the majority of cases the régime was soon broken.

CHART 3.

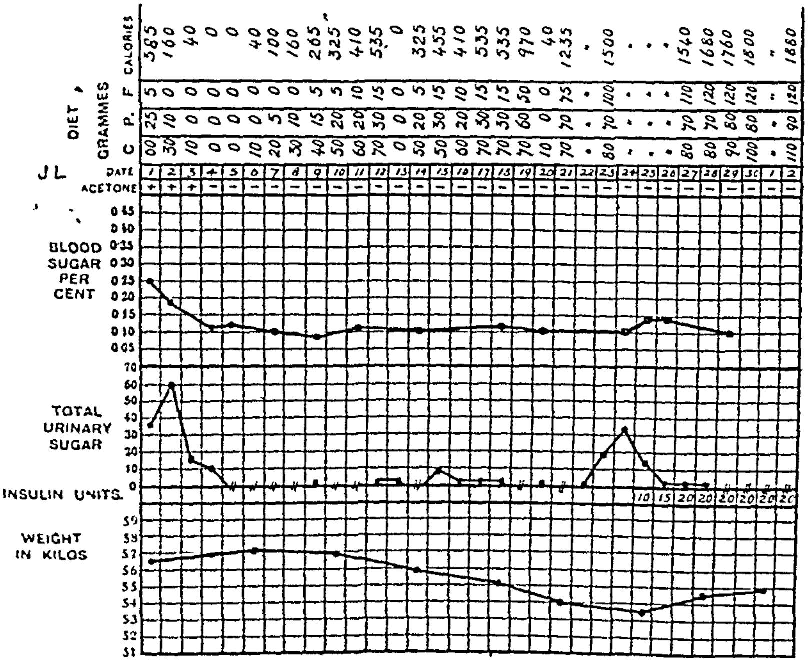


To illustrate the treatment of an "acid" case with insulin. Carbohydrate is given in amount with a minimum of fat, accompanied by large doses of insulin. With the disappearance of acetone from the urine the carbohydrate is cut down, the fat is increased, and insulin dosage is maintained until the urine becomes sugar-free. Subsequently the dose of insulin is gradually reduced.

The second method was to select a calculated adequate diet for the patient, commence with this as soon as it was decided that insulin was necessary, and, by gradually increasing doses of insulin, bring the urine sugar-free with, if possible, a blood-sugar constantly within normal limits. For the old-standing case and for the elderly this was the method of choice; and for the average hospital case, whose carbohydrate tolerance was found to be low and diet inadequate, we considered it to be the more satisfactory.

Insulin was usefully employed to expedite treatment in certain cases. A stout young woman of 22 was admitted with much sugar and acetone in the urine. She would probably have done quite well on diet alone, but as it was difficult to bring the urine sugar-free by starvation, and as time was a consideration, small doses of insulin were administered and continued for a week. Sugar and acetone quickly disappeared, and the subsequent treatment proceeded on the usual dietetic lines. Recently this procedure has been employed more often. It should be used only where, as in hospital, the patient is under careful observation and progress can be checked by blood-sugar estimations.

CHART 4.



To illustrate the treatment of a case of moderately severe diabetes with insulin. The urine is readily rendered sugar-free by starvation treatment; but the tolerance is rather low, and the diet, after three weeks' treatment, is inadequate. An attempt to increase the diet is followed by glycosuria. Insulin is now administered in small doses when the urine is kept sugar-free on an increasing diet.

Hypoglycæmia.

We did not, as has been advocated, cause in each patient a slight hypoglycæmic reaction. In only two cases did such a condition arise. Both patients wakened up in the middle of the night restless and perspiring freely. A cup of hot tea with about 15 g. of bread was sufficient in both cases to clear up the condition in a few minutes. Where it seemed possible that trouble might arise in the night after an evening injection, the patient has been advised to keep a small portion of his carbohydrate ration and to eat it just before going to bed. This has proved very satisfactory, and would appear to be a perfectly sound and safe procedure.

Deaths.

Four cases died during the year, one male and three female.

The man was known to have had diabetes for two years, and on a previous occasion coma had seemed imminent but had been averted. He had been in bed for two weeks before admission, and had become very ill the previous day. On admission he was collapsed and cold. The pulse was rapid and poor in quality. The respirations were frequent and sighing in character. The breath smelt strongly of acetone, and he was very drowsy. The blood-sugar was 0·265 per cent.; the urine contained 5 per cent. sugar, acetone + + +, and a heavy cloud of albumin. There was a marked lipæmia. Under stimulation and with insulin, 45 units, the pulse improved, he became more intelligent, and the drowsiness practically disappeared; but the pulse gradually failed, and he died 12 hours after admission from cardiac failure.

One woman, who had previously been treated in hospital and who was carrying on with insulin outside, was admitted with broncho-pneumonia. The urine contained 2·7 per cent. sugar, and acetone + + +. The blood-sugar was 0·10 per cent. There was no suggestion of drowsiness, and the respirations were rapid and shallow. Under insulin, 60 units, the acetonuria practically disappeared in 15 hours, but she died of cardiac failure, mentally clear to the end.

The second female was a girl who suffered from diabetes of a moderately severe type, together with an extensive tuberculous lesion of the right lung. Treatment of the diabetes with insulin was very satisfactory, but she had several severe attacks of hæmoptysis while in hospital. On dismissal she was transferred to a sanatorium, where she died shortly afterwards.

The third case was somewhat similar to the first. She was a woman of 33 years, admitted unconscious, cold, collapsed, and pulseless. She had a broncho-pneumonia. The breath smelt slightly of acetone, but acetonuria was slight and the tinct. ferri perchlor. test was negative. The blood-sugar was 0·50 per cent. and the urinary sugar 2 per cent. She rallied somewhat under stimulation, but she never became conscious. 60 units of insulin in all were administered, but death occurred within 24 hours.

Review of Results.

When we review the results obtained in these cases it is convenient to consider them under two groupings: (1) Those admitted for the first time during the year, and (2) those who had previously been under treatment. The first group consists of 21 cases, 7 female and 14 male; the second of 12 cases, 5 female and 7 male. The cases in the first group varied in the severity of their condition, but on the whole the majority were of a severe type. Those in the second group were all severe diabetics and patients who had shown but little or no response to "Allen" treatment. Four patients died. The remaining 29 without exception showed improvement under insulin. Thirst and polyuria disappeared with varying rapidity in all cases, and in all the mental outlook was very greatly improved. Pruritus was rarely troublesome. One case of toxic amblyopia benefited very greatly while on insulin. In two cases the knee-jerks, absent on admission, returned after a period of treatment. The results were most striking in the Group 2 cases. All of these cases, 12 in number, showed glycosuria when readmitted to hospital, and several were very acid. All had suffered more or less severe relapses, and seven had been in hospital on one or two occasions on account of these before being readmitted for insulin treatment. Regular work of the type which they could perform was impossible to them. With insulin relapses have been infrequent and slight in degree, and hospital treatment has not again been necessary in any one of them. The appearance of general well-being in patients who had so long borne the dejected air of the chronic and hopeless invalid was very remarkable. The factors which contributed to this will be considered in greater detail.

Weight.

The weights in both groups varied as follows:—

	Gain.	Loss.	Unchanged.
Male	6	7	8
Female	2	4	6

From these figures it is clear that in the majority of cases the weight either remained unchanged or fell *while under treatment in hospital.* The significance of this point is recognised when it is remembered that the great majority commenced treatment on starvation diets. The greatest loss of weight was 4 kilos, and the average loss 1·9 kilos. The greatest gain was 10 kilos occurring in an emaciated patient admitted with a carbuncle on the shoulder. The average gain was 3·9 kilos. A gain in weight was more frequent among the younger patients. In six patients below the age of 20 a gain in weight was recorded in five. The sixth suffered from pulmonary tuberculosis.

Of the 12 patients who had been under treatment once or more often in hospital a gain in weight occurred in six: four remained unchanged and two showed a slight loss amounting in each case to about one kilo. A "follow up" of these cases, however, has revealed a much more satisfactory result. In all who have carried out treatment conscientiously a gain in weight has been invariable. Two women, one a clerkess, the other a mill-worker, have gained 5·5 kilos and 8 kilos respectively in the three months following dismissal. A boy, who gained 5 kilos while in hospital, has gained an additional 9 kilos in six months. Inevitably the less intelligent manual workers have fared most badly.

Carbohydrate Tolerance.

	Gain.	Loss.	Unchanged.
Male	5	1	1
Female	5	—	—

The gain in carbohydrate tolerance among the second group of patients was very constant. One case gained 105 g.; the average gain was 42 g. The "unchanged" case was one complicated by a carbuncle. The "loss" case showed a decrease of 20 g. in tolerance with reasonable dosage of insulin. He was a ploughman who had paid no attention to diet following his previous admission, and who had considerably deteriorated in consequence. Only very occasionally has an attempt been made to increase the carbohydrate tolerance after dismissal. Where improvement has occurred the insulin has been reduced either in amount or in the number of doses required, *almost every patient regarding this as the* greater boon.

In July, 1923, I reported a case in which under insulin the carbohydrate tolerance was considerably increased, and where subsequently the insulin was gradually *cut out,* the patient remaining free from glycosuria on the increased carbohydrate. This case was readmitted four months later with a carbuncle, the urine loaded with sugar, and acetonuria + + + +. On this occasion he left hospital with the carbohydrate value unchanged from the previous dismissal, but he now required 35 units of insulin per day to keep the urine sugar-free.

In another case, *a man aged* 34, treated by diet alone, the carbohydrate tolerance reached 90 g. per day, at which level it ran for eight months. The urine was sugar-free during all this time, and the weight remained stationary. In March, 1924, he contracted influenza, and was ill for about three weeks. Sugar returned in amount, and *now* he requires 16 units of insulin per day to keep the urine sugar-free *on* 70 g. carbohydrate.

In none of this series in the brief period under review have we succeeded in raising the carbohydrate tolerance to a level which could be maintained without insulin, even among the early or younger patients.

Acidosis.

This has given rise to little or no trouble. In hospital the urine became acetone-free very readily. In one case acetonuria presisted for 18 days, but this was quite exceptional. Occasionally patients returning to report showed considerable acidosis, but errors in insulin dosage or in diet were *always found to* account for this condition.

Dosage.

The dose of insulin varied very greatly. Apart from those cases who died, the highest dosage given in any case was 70 units in the 24 hours. The average maximum dose was 30 units. The average dismissal dose was 22 units, the amounts varying from 50 units in one case to 5 units. In all cases where insulin was required on dismissal, diet was so arranged as to allow of at most a morning and evening injection. The objections to a midday dose in the case of working men are obvious. We have even found it more expedient to allow a slight glycosuria rather than to *insist upon a more frequent dosage. Hospital* patients tend to lose heart and to abandon treatment *in despair when too many injections are demanded of* them.

Sepsis.

Three patients were admitted suffering from septic infections—one from an otorrhœa, one from a large carbuncle on the shoulder, and a third from numerous carbuncles and abscesses on the back.

In the first case the otorrhœa, which had been troublesome *for some time and had suddenly flared up, rapidly cleared* up and hearing was much improved. This patient had previously left hospital on 100 g. carbohydrate with 30 units of insulin. While discharge persisted from the ears the carbohydrate tolerance was lowered to 80 g. with the same *dose of insulin,* but later it returned to its former level. In striking contrast to this result was the experience of the same patient before treatment with insulin was available. He was admitted in November, 1922, with a severe sepsis of the left hand, the result of striking his thumb with a hammer while at work. With difficulty the hand was saved, and two months later healing was not complete. During this time the glycosuria could not be controlled by diet, and his general condition greatly deteriorated.

The second case was very ill on admission and very acid. The carbuncle had been opened just before he came under observation. With insulin the acidosis disappeared, the slough rapidly separated, and healing proceeded comparatively quickly. The effect on carbohydate tolerance and weight in this case has been referred to above.

The third case was that of a very stout man—he weighed 102 kilos—admitted with a large carbuncle on the neck and two others on the back, together with numerous small boils. He was very ill. The urine contained acetone + + + and sugar 5 per cent. Upon a low diet (C. 80, P. 60, F. 20) and with a maximum insulin dosage of 50 units the acidosis and glycosuria gradually disappeared. He passed successfully through three operations under insulin, and healing, though *slow, was satisfactory.*

Capacity for Work.

Most patients have been able to return to their old *employment.* One man continues to work as a bricklayer and loses no more time than his fellows. Another works all night in a printing office. Two carry on successfully as commercial travellers. One is at work as a tramway conductor. Two boys attend school regularly. The majority of the women are at home, and these are quite fit for their housework. Two find no difficulty in accomplishing their work as clerkesses; one is a mill-girl, two are in domestic service, and two are nursing, both in rather strenuous employment. Nevertheless, it is difficult to assess the capacity for work in all at the present time. Some who are fitted for light work only are compelled to do labouring or some equally unsuitable work. In time they are forced to give up and remain idle.

ROYAL WEST SUSSEX HOSPITAL.—The ninety-eighth annual report of this institution for the year which ended on Dec. 31st, 1924, shows that the total number of in-patients treated during the year was 1041, while 2123 out-patients made 6715 attendances. Besides these there were 1024 attendances in the X ray department and 1920 patients were treated with electrical massage. Unfortunately, the expenditure exceeded the income by £1624, but there was a gratifying increase in patients' donations—namely, £1610 as against £1415 in 1923.

THE OPERATIVE TREATMENT OF CLEFT-PALATE.*

A RECORD OF RESULTS IN 125 CONSECUTIVE CASES.

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THE operation for the closure of a cleft-palate is on a plane very different from that occupied by most of the commonly performed surgical operations in that the results, immediate and remote, are uncertain and sometimes very disappointing. It seems desirable, then, that surgeons who have had the opportunity to perform this operation in a comparatively large number of cases should follow up their results, assess these as accurately as they can, and publish them. If we are to make an advance in cleft-palate surgery towards a higher standard of efficiency we can only do so by a study of our present results in relation to surgical technique, type of cleft, and other factors.

After-Results.

The 125 patients in this series have been operated upon by me since June, 1911, and the immediate result—the result at time of discharge from hospital or nursing home—recorded in each case on the list which I kept, so uncertainty from ambiguous statements, or from lack of any statement at all (as is encountered not infrequently when one searches hospital notes), has been avoided.

In regard to the more important matter of the late or functional result an attempt has been made to trace and examine every case in which an immediate or anatomical success was secured; I excluded from these the very young patients (10) on whom the operation has been performed within the last two years on the ground that sufficient time had not elapsed to permit of a proper examination of their speech. Eighty-four patients have been written to, and of these 58 have been traced; 49 of these 58 have been personally examined by me, while in 8 cases I have had to rely on information obtained from the parents or school teacher. One child died two years after a successful closure. It is disappointing that so many (26) have not been traced, but it is not surprising, for many of the operations were done 10 to 13 years ago.

The patients (23) in whom partial union only was secured have not been systematically followed out; most of these present defects of various sizes in the hard palate with an intact soft palate; it is known that some of the older ones have had their speech materially improved by the fitting of an obturator to the hard palate defect. A minority present an intact hard palate with a cleft, complete or partial, of the soft palate; probably many of these could be benefited by further operative measures.

The patients (7) in whom the operation was a total failure must be regarded not merely as failures, but as being in a worse plight than the patient whose cleft has never been operated upon. The same view, it should be added, must be taken of two of the partial union cases in whom the resulting defect was a very wide one.

Type of Operation and Age of Patient.

The Langenbeck operation has been employed throughout, and in this the technique and modifications introduced and described by J. Berry[1] have been followed fairly closely. The operation has not been done in children under 2 years of age, except in the case of unusually well-developed children and those whose cleft involved only the soft palate.

During the past 20 years much attention has been focused on the question of the best age for the operation, particularly so since the introduction of Lane's operation. Probably nearly all surgeons now agree that the whole aim of the operation is to restore the palate as an organ of speech whilst interfering as little as possible with the conformation of the upper jaw and teeth; and that the technique of the operation and the determination of the most suitable age for it must be based on this object and not on the mere cobbling up of a structural defect. Berry and R. W. Murray[2] made this point so clear at the time of the cleft-palate controversy in 1911 that it may seem platitudinous to repeat it now, but one still not uncommonly encounters a feeling in the profession that the operation should be done "early" for the sake of the child's nutrition. As a matter of fact, it is remarkable that so very few infants with complete cleft-palate perish between the performance of the hare-lip operation at 3 months of age, and the time for the palate operation at, say, 2 or 3 years of age. It is often said that the best time for the Langenbeck operation is before "faulty habits of articulation have been acquired," but against this apparently sound advice it must be stated that very good speech results may be obtained by performing the operation long after the acquisition of faulty habits of speech by the child, and also that faulty habits will follow inevitably on a defective operation performed before the child begins to speak at all. The most suitable age, I believe, for the operation is that between 2 and 4 years. The exact age must be decided in each case according to the type of cleft and the condition of the child.

One step in the performance of the operation is worth dwelling on, because I believe it has a most important influence on the quality of the functional result, and that is the stage at which the operator has freed the nasal surface of the soft palate from the posterior edge of the hard palate; at this point he draws down the palatal flap towards himself in order to gauge its mobility, and in doing so he obtains (with good illumination) a clear view of one or two folds of mucous membrane running from the nasal surface of the soft palate upwards along the lateral wall of the naso-pharynx; division of these folds—which contain a considerable proportion of the elevator muscles of the soft palate—will much improve the mobilisation of the palatal flap and therefore render median suture very easy, but such a step should not be carried out except in those cases where the cleft is unusually wide, and then the division should be made sparingly and at one point only. I believe that the poor speech met with in some of my cases has been caused by free division of these folds; such cases when seen a few years after operation may present a palate of very good appearance but with poor mobility.

Causes of Failure to Secure Complete Union.

The causes of failure to secure complete union in this series may be classified as follows:—

1. Performance of the operation in unsuitable subjects—i.e., children of poor physique, anæmic children, and children showing a fairly severe grade of catarrh of the naso-pharynx with muco-purulent secretion.

(2) Infection from pre-existing infection of naso-pharynx, as in No. 1. Latent infection—scarlet fever and measles—at time of operation. A severe infection is likely to cause a breakdown of the entire suture line.

(3) Ischæmia of the edges of the cleft, from too extensive lateral incisions or from the tying of sutures too tightly, is often responsible for a hole at the back of the hard palate. Such a hole, even if fairly large, may close spontaneously in the course of months, but the resulting palate is shortened from dragging forwards of the soft palate by cicatrisation.

(4) Inversion of epithelial edges is another cause of holes, particularly in the hard palate.

(5) Tension. This is usually regarded as the source of all evil, but I have not found it by itself to be a

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* A paper recently read before the Manchester Surgical Society.

[1] Berry, J., and Legg, T. P.: Hare-lip and Cleft-Palate. London: J. and A. Churchill. 1912.

[2] THE LANCET, 1911, ii., 1166.

common cause of failure. In many cases there is little or no tension on the flaps at the conclusion of the operation. Tension begins to exert an influence a few days after operation as the lateral incisions begin to contract, and may then produce a gap in the suture line, particularly at the front part of the soft palate, unless the edges of the cleft have been accurately sutured with a durable material (silkworm gut).

Analysis of Results.

The results obtained in this series are set out in two groups. The first group represents the immediate anatomical results, and the second group the late results as judged by the quality of the speech. It is noteworthy that the series is made up of consecutive cases, and presents an unusually large proportion of *complete clefts.*

Number of patients operated upon, 125. Mortality = 1, or 0·7 per cent. (death due to reactionary hæmorrhage 24 hours after operation).

A.—*Immediate Results.*

1. Complete clefts, 67. Complete union, 42 (62 per cent.) (three of these after two operations); partial union, 21 (31 per cent.); total failure, 4 (7 per cent.).

2. Incomplete clefts, 57. Complete union, 52 (91 per cent.); partial union, 2 (3 per cent.); total failure, 3 (6 per cent.).

3. Summary of all clefts, 124. Complete union, 94 (76 per cent.); partial union, 23 (18 per cent.); total failure, 7 (5 per cent.).

B.—*Speech Results.*

In regard to the classification adopted in the following tables children classed as "good" have been able to speak clearly in conversation or in dictation, without gross defect, so as to be readily understood by a stranger. Many of them could be fairly described as having normal speech. In the "moderate" class the children have been able to sound the explosive consonants, and "Z" and "sh" when tested by simple words, but their ordinary conversational speech has been definitely defective. In the "poor" class the speech has retained the cleft-palate characteristics, though the child has been able to pronounce some of the explosives with effort; most of these children speak better than the average child with an unclosed cleft. Very few of these children have had skilled training in speech after the operation; probably several in the moderate and poor classes could be materially improved by such means. The numeral before the patient's initials indicates the age in years of the patient at operation, and that after the initials the number of years intervening between operation and examination of speech.

Complete Clefts, 30.

Speech good, 15.		Speech moderate, 9.	Speech poor, 6.
2. W. B. 13	6. T. L. 5	4. J. P. 12B	2. E. B. 9B
3. J. S. 13	2. J. Mc. 4	2. A. F. 9	2. W. K. 5
3. H. O. 13	2. F. C. 4	2. E. B. 7B	2. E. B. 4
7. D. R. 13	3. R. H. 4	4. M. V. 7	9. J.H.R. 3
3. E. S. 12	2. I. F. 4	2. R. H. 6	4. R. H. 3
2. S. T. 10B	2. E. B. 3	11. R. H. 4	2. W. S. 3
7. C. H. 9	3. L. S. 3	2. O. M. 4	
2. W. S. 5		5. F. A. 4	
		2. H. R. 3	

B = bilateral cleft palate.

Incomplete Clefts Involving Hard and Soft Palate, 17.

Speech good, 7 (3 normal).		Speech moderate, 6.	Speech poor, 4.
3. A. H. 12	4. K. J. 3	5. A. H. 9	3. J. L. 6
7. C. P. 10	2. M. C. 4	2. L. D. 6	12. M. B. 5
4. J. S. 10	2. F. W. 3	4. A. S. 5	2. T. R. 4
6. C. G. 8		2. V. C. 4	2. S. L. 4*
		7. W. W. 4	
		2. D. R. 3	

* Feeble-minded.

Soft Palate Only, 10.

Speech good, 9 (5 normal).		Speech moderate.	Speech poor, 0.
4. M. T. 12	4. D. J. 4	9. M. Mc. 2	
5. G. C. 10	4. J. C. 4		
1. A. E. 7	2. J. B. 4		
7. B. O. 6	5. J. H.		
1. T. G. 5			

Summary of speech results in 57 cases: Speech good, 31 (55 per cent.); speech moderate, 16 (28 per cent.); speech poor, 10 (17 per cent.).

Causal Factors of Bad Speech After Closure.

Examination of these children has shown very clearly that a child who speaks badly a few years after the closure of a cleft palate will be found to have a palate shortened in length from front to back or a soft palate that is not elevated during phonation. A well-formed alveolar arch is also an important factor in the determination of really normal speech as distinct from good speech, and hence a larger proportion of normal speakers will be found amongst the children whose clefts have been incomplete—in these the intact alveolar arch has prevented approximation of the maxillæ.

It has recently been urged by Gillies,[3] Kelsey Fry,[4] and others that closure of a complete cleft in young children (less than 6 years of age) will lead to narrowing of the alveolar arch and also to shortening of the palate, and that our methods of treatment should be radically altered to overcome these defects. This contention has some force and undoubtedly requires careful consideration, but it must be pointed out that marked contraction of the alveolar arch may be seen not uncommonly in cases of complete cleft-palate that have never been operated upon. This is especially the case in children who have had a wide alveolar gap under the hare-lip.

Narrowing of the alveolar arch met with after operative closure of a complete cleft-palate should not, therefore, be ascribed entirely to the operation; operation undoubtedly plays a part important or otherwise according to the age of the child at the time of the operation. Children whose hard palates have been closed during the first or second years of life will show contraction of the dental arch as the result of the operation; but if the operation is performed during the third or fourth years very little narrowing of the arch will result from it.

In regard to the shortening of the palate (a most important factor as a cause of bad speech after closure) I have noted repeatedly in the children in this series that many of the palates were abnormally short before operation, particularly in the case of the incomplete variety of cleft which reaches into the fore-part of the hard palate and attains its greatest width anteriorly; in such a type operation will by reason of the width of the cleft shorten the palate still more. Latterly I have been so impressed with the developmental shortening when met with in this type of cleft that I have advised against operation. It is said that median suture of the cleft must, by producing traction from side to side, inevitably lead to shortening in the opposite (antero-posterior) direction. This statement takes no account of the displacement inwards of the palatal flaps after proper mobilisation, nor of the real and immediate increase in length of the palate which the operation produces; this lengthening is due to the reduction of the antero-posterior arch of the palate—often abnormally high in these cases—which follows the falling downwards of the palate as a whole after free detachment of the muco-periosteal flaps and soft palate from the bony palate. Shortening of the palate caused by operation is usually due to the occurrence of a hole at the back of the hard palate; such a hole heals by the gradual pulling in of its edges, and so the soft palate is drawn forwards.

Conclusions.

In conclusion, the proportion of good results outlined in this paper cannot be regarded as satisfactory, yet it is large enough to lead one to believe that a much greater measure of success might be secured by closer attention to the various factors that influence the issue of the operation. The operation is not one to be undertaken by a surgeon whose sphere of practice does not afford frequent opportunities for experience in this field, nor by one whose interest does not extend beyond the immediate result; but undertaken with a proper appreciation of its purpose, technique, and limitations, the operation, I believe, will hold a high position amongst the operations of surgery.

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[3] Brit. Med. Jour., 1921, i., 335.

[4] Proc. Roy. Soc. Med., Section of Odontology, 1921.

CLEFT-PALATE:

SOME PITFALLS IN OPERATION.

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ALTHOUGH individual surgeons of large experience obtain wonderful results by widely different types of operation for cleft-palate, yet it is common knowledge that the path of the average surgeon is strewn with gaping failures. These failures are in the main due to tension and sepsis.

Median Suture and Flap Operations.

The types of operation in most general use are the median suture (Langenbeck) and the flap operation (Lane). Of these the Langenbeck is undoubtedly the more popular and generally satisfactory from all points of view. Median suture ensures complete closure of the cleft more certainly than does the flap operation; it gives a movable soft palate of better length, and exercises a less harmful effect on the eruption of the teeth and the width of the alveolar arch.

There are few, if any, clefts undamaged by previous operations which cannot be successfully closed by median suture. Moreover, the mortality is negligible, which is far from being the case with the flap method. Its main drawback is that it cannot be used in early infancy, the most suitable age being from 1 to 3 years.

One of the consequences of operation by either method is the dragging forward of the soft palate to a greater or less degree. Recently Mr. Gillies has introduced a method to overcome this. He separates the soft palate from the hard and closes the cleft in the soft palate only, using an obturator to occlude the T-shaped aperture which remains. This no doubt makes for a better closing off of the naso-pharynx and so for better speech. The sufferer from cleft-palate, however, very seldom learns to speak normally, whatever operation has been performed; perfect speech in these cases is almost a curiosity.

A soft palate which is freely movable, and long enough completely to shut off the naso-pharynx, is doubtless an important factor in securing good speech after operation, but by far the most important one is prolonged and careful training in articulation, a desideratum quite unobtainable by the majority of patients. Probably most patients, if given the choice, would prefer an operation which made them independent of an obturator.

In the operation of median suture there are two things which must be avoided at all costs. They are both well recognised, and both are always mentioned in every text-book, article, and lecture on the subject, and both are consistently disregarded by the majority of surgeons when operating. These two things are tension and sepsis. Tension promises failure; tension plus sepsis guarantees it. Over tension we should have complete control, over sepsis control is necessarily less perfect.

Tension.

The relief of tension is usually attempted by means of inadequate lateral incisions. A further handicap to the success of the operation is the customary use of some form of tension suture. The use of tension sutures, to my mind, is a mistake for the following reasons: Ordinary tension sutures will relieve tension for the first three or four days, but at the end of that time, when the main suture-line is at its weakest, they will have so far cut into the palate as to be of little value as supports, while they will form additional foci of infection. The use of lead or other plates no doubt helps to relieve tension, but is apt to cause necrosis, and at best encourages sepsis by the presence of large foreign bodies. It is difficult to imagine a culture-bed of a more encouraging kind for organisms than a tape tied round the hard palate through the lateral incisions as advocated by some American surgeons.

Tension can best be prevented by making long lateral incisions. These should commence on the lower jaw on either side and be carried up the ascending ramus on to the upper jaw to the posterior border of the last tooth. Here the incisions turn inwards, and keeping immediately against the teeth are continued as far forwards as may be necessary, even to the canine tooth. These incisions, if properly placed, are well outside the tensor and levator palati muscles, and they therefore do not interfere with the mobility of the soft palate.

Sepsis.

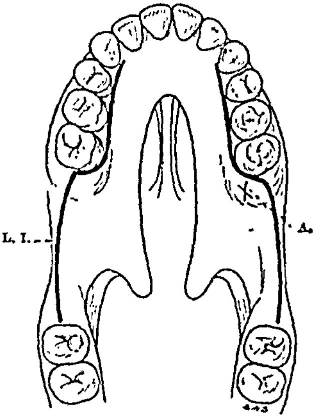
Many children with cleft-palates are very badly nourished, and malnutrition greatly lowers resistance to infection, so that it may be necessary for the patient to be specially fed and nursed into good condition for some weeks before operation. A very great deal more care than is usual should be taken over the preliminary cleansing of the mouth; any mouth is of unknown potentiality as regards its infectivity, and no imaginable precaution should be neglected. Misplaced and carious teeth should be removed, and the gums, if unhealthy, swollen, or spongy, must be made clean and firm. This may be best achieved by wiping the gums two or three times a day with gauze swabs and a weak solution of citric acid. Above all, in every case the tonsils, whether visibly affected or not, must be enucleated, and the adenoids, if present, removed. An exception may occasionally be made in a case of a lesser degree of cleft in a small baby.

I regard the removal of tonsils and adenoids as the most important of all the preliminaries to operation. In the majority of cleft-palate patients, in addition to a large pad of unhealthy-looking adenoids, there are large dirty tonsils with their crypts blocked by collections of cheesy débris. The potentiality of such reservoirs of sepsis for causing an acute flare-up after an operation on the palate needs no emphasis. If the enucleation is skilfully done there is no fear that contraction of the soft palate will take place and make the subsequent closure of the cleft more difficult. The enucleation should be done not less than four weeks before the palate operation. The best age for operation is from 1 to 3 years, according to type of cleft.

Operation.

The child is arranged with a sand-bag under the shoulders, throwing the head well back. The surgeon sits at the head of the table, with his assistant on the child's right and the anæsthetist on the left. As the working space is confined, the simplest *efficient* gag is the best, and this, I think, is Mr. Waugh's small-toothed one. The tongue is held forward by a stitch or small-toothed forceps. Sponging is best done by the surgeon only, the assistant confining his attention to keeping the chin up and the tongue forward with his right hand, while with his left he steadies the patient's head. For the sewing up a good light is absolutely essential, and failing a powerful overhead lamp the best illumination is obtained from a head-lamp worn by the assistant, a much more convenient arrangement than for the surgeon to wear it himself. The mouth being well opened, the operation is begun by making the lateral incision on the side away from the gag.

The incision begins on the lower jaw and is carried up the ascending ramus on to the upper jaw behind the last tooth, then turning inwards it is continued immediately internal to the teeth as far forwards as may be necessary. An elevator is then worked into the incision a little in front of the last premolar, and the muco-periosteum is raised towards the middle line until finally the elevator appears in the cleft. The muco-periosteal flap is then separated from the bone as far back as the junction of the hard and soft palates, and also forward well beyond the end of the cleft, if that is incomplete, and nearly as far as the alveolar border in the case of the complete cleft. During this part of the operation there is free bleeding, which can be controlled by gauze packing. The posterior part of the incision is then dealt with, an elevator being used to widen it and push the whole soft palate and fauces towards the middle line. Special attention is given to freeing the tissues at the posterior end of the alveolar border (see A in diagram). The incision is now plugged with gauze soaked in adrenalin, and after moving the gag across the procedure is repeated on the other side.



L. I., lateral incision. A., alveolar border.

The next step is the separation of the soft from the back of the hard palate. This is best done with a small pair of sharply curved scissors working from the cleft outwards. It is never an easy part of the operation, and in a small baby with a cleft of the soft palate only may be extremely difficult. Nevertheless it must be thoroughly done and the separation carried out as far as the hamular process. It is convenient to work on the side opposite the gag. The two halves of the palate should now be absolutely flaccid, and meet without tension from end to end. The trimming of the edges of the cleft should be left till now to avoid bruising and contamination of the raw surfaces. It is generally unnecessary to cut anything off the edges of the hard palate, but a broad strip of mucous membrane must be removed from the soft. This is best done with a very sharp knife, the palate being made tense by a fine suture passed through each half of the uvula, and held by the assistant; this suture is also a great help in keeping the palate taut during the sewing up.

Suturing is best done with Lane's cleft-palate needles and needle-holder, and the suture material should be the finest ophthalmic silkworm gut. On no account should silk or catgut be used. The suturing starts at the front, the greatest care being taken to see that the edges of the hard palate are well everted and that the stitches are *not* tied too tightly. The stitches should be about ⅛ in. apart, and should be continued round the uvula for some distance on to the back of the soft palate. At one time I used in addition a continuous suture along the dorsum of the cleft throughout its length as an aid in securing eversion of the edges of the hard palate, but I have given this up as unnecessary. The mouth is now carefully cleaned of dried blood, &c., by small gauze mops wrung out in saline, the suture line is painted with Whitehead's varnish, and the gauze removed from the lateral incisions, though if there is any oozing from them small gauze plugs without adrenalin may be left in, but must be removed within 12 hours.

In a complete single cleft no attempt is made to join the alveolar margin, and in double cleft there is a space left behind the premaxilla. In neither case is it a matter of importance from the point of view of speech or swallowing; for the space rapidly closes in, and in any case patients with complete clefts generally have to wear a small plate on account of the irregularity of the incisor teeth.

This method of operating most usually results in complete union with a good movable soft palate. A failure from an acute flare up of sepsis occasionally occurs and at present appears to be unavoidable; it is common to all types of cleft-palate operations.

Summary.

Best age from 1 to 3 years, depending on type of cleft. Careful attention to the preliminary cleansing of the mouth. Removal of tonsils and adenoids in every case; not less than four weeks before operation. Perfect flaccidity of the two halves of the palate, secured by long lateral incisions commenced on the lower jaw and carried up outside the soft palate and as far forwards as necessary. Meticulous care in sewing with fine silkworm gut which is non-absorbent and is not absorbed. No tension sutures.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF ORTHOPÆDICS.

NON-TUBERCULOUS COXITIS.

A MEETING of this Section was held on April 7th under the presidency of Mr. H. A. T. FAIRBANK.

Mr. ALAN TODD opened a discussion on the *Differential Diagnosis of Non-tuberculous Coxitis in Children and Adolescents.* He said that not long ago practically all painful affections of the hip-joint in young people were assumed, sometimes on slender evidence, to be tuberculous, and the rule was to treat them on that assumption. Gradually careful observation showed that a number of cases could not have been due to tubercle, as their behaviour did not accord with the course of that disease. A strong confirmation of this view was afforded by a study of skiagrams, and it was evident that there occurred such non-tuberculous conditions as coxa vara, Perthes's disease, and cystic formations in the upper end of the femur. There still remained a large class in which more exact definition and classification were needed. When the London County Council decided to send crippled children to various centres, and a month's quarantining was established, it was found that some of the children who were thought to have tuberculous disease of the hip got well in six weeks. It could of course be argued in regard to those cases that the diseased condition had been merely patched up, and that there was a liability for the disease to break out again, with disastrous results. The late Prof. Howard Marsh pointed out the importance of activating cases of suspected tuberculous disease, and of refraining from splinting them, for splinting would cause the symptoms to abate, and the patients might be sent away untreated until a serious relapse occurred later; whereas if the children were allowed to run about for 10 or 14 days the diagnosis would become obvious without risk having been run. A number of cases watched for long periods were found to have got well and to have remained well, indicating that they had never been tuberculous. Some 10 per cent. of the cases sent by doctors as possibly early tuberculosis were non-tuberculous, while in private practice, owing to symptoms being noted earlier and their significance being more realised, the percentage was higher.

Classification of Cases.

Mr. Todd's object was to direct special attention to the non-tuberculous cases, so that a comparison of studies and experiences might lead to a more extensive and exact knowledge concerning them. He said non-tuberculous coxitis in children and adolescents was divisible into five categories: (1) traumatic; (2) coxa vara; (3) infected cases; (4) Perthes's disease; (5) miscellaneous. In the traumatic transient coxitis the child had probably had a fall a few days previously, and complained of pain on movement and limitation of movement in various directions. Some got well spontaneously. Some of these patients complained, in addition, of a dull aching pain, and there might be very acute pain at a particular stage of one movement. When that was so, he thought a patch of articular cartilage had been bruised and acutely inflamed. Cases of acute traumatic chondritis got well after a few days' rest in bed with splintage. In some there was a recurrence of symptoms after a few days of running about, and after a time some wasting was noted. He had not seen a case of tuberculosis of the hip which became obvious within six weeks of a local injury, or as the result of a severe blow on the hip. Usually the injury which precipitated tuberculous manifestation was a slight, not a severe one. In juxta-epiphyseal strain the upper epiphysis was rarely separated, and this was demonstrable by skiagram. If there was suspicion that this region had been strained, the case should be kept under observation and X rayed periodically for some months afterwards, as coxa vara might develop. Group (2), coxa vara, could always be distinguished from tuberculous disease by X rays. In an early stage of coxa vara adduction alone was limited, whereas in tuberculosis there was limitation in more than one direction. Some of the cases in group (3) directly followed various febrile conditions, such as pneumococcal lesions, measles, scarlet fever, typhoid, influenza and, in children, gonorrhœal vulvo-vaginitis. Others followed surgical conditions, such as tonsillitis, otitis media, operations on tonsils and on appendicular abscesses. Some of the hip conditions here were probably microbic, but a number were merely toxic apart from micro-organisms. Scarlet fever rarely caused coxitis, but when it did the degree was severe, and there might be ankylosis, either with or without suppuration. Measles was followed by coxitis fairly often, and the arthritis owning this cause was fairly mild. If these cases were splinted, the arthritis usually subsided in two months. Broca had mentioned that in some cases of coxitis, not necessarily microbic, there was a marked flattening of the femoral head. Whether the pneumococcal cases were primary or secondary, as both were blood-borne infections, he did not think the differentiation was material. Thirty per cent. of these cases occurred in children under 11 years of age; they had acute pain, but swelling was slight. There were high fever, delirium, and even mania. The teeth, throat, conjunctivæ, and middle ear were some of the most important foci of infection in this condition.

In coxitis secondary to acute or subacute epiphysitis the onset was sudden and the course rapid; there were marked hyperpyrexia and prostration, and in a few days the X rays revealed gross changes in the joint. This and the marked leucocytosis demarcated it from tuberculosis. Coxitis in an infant under a year old was more likely to be non-tuberculous than tuberculous. In Still's disease and in Perthes's disease the diagnostician had a definite cycle of changes to guide him. Among the miscellaneous cases Mr. Todd gave some attention to hæmophilia, which led to recurrent attacks of pain and limitation of movement. A few weeks in bed usually caused these to subside, and confirmation of the diagnosis arose from X ray examination and the effect of special treatment. A pseudo-coxitis occurred in children who suffered from dyspeptic troubles, including constipation, their pain being definitely referred to the hip-joint. But there was no muscular wasting in these cases, nor definite limitation of movement. Careful dieting and giving a non-protein diet brought about a rapid cure.

In regard to the general differentiation of tuberculous from non-tuberculous cases, Mr. Todd stressed the need for a careful study of the patient's normal temperature variations, and the changes induced by specified amounts of exercise. After the latter the ordinary child would not show any change, but the tuberculous patient would have a rise of temperature half an hour after the exertion. Sir William Hale-White long ago pointed out that in tuberculous cases, at a very early stage, the pulse-rate was accelerated out of proportion to the temperature rise, and the speaker confirmed that; he had not found this in any other conditions. He thought it would be valuable to discuss this topic again in about two years' time, when accumulated experiences on the lines mentioned might lead to the subject being placed on a more firm basis.

Need for Accuracy in Diagnosis.

Mr. R. C. **ELMSLIE** said he had seen quite recently cases of obvious coxa vara diagnosed, and treated for two years, as tuberculous hip. There was need not only for a greater accuracy of diagnosis in these joint conditions, but also for a more general and thorough dissemination in the profession of the knowledge already acquired. The differentiation of coxa vara from tuberculous hip was first made, without the aid of X rays, on clinical data, in 1881. In a large series of cases of coxa plana, not one suppurated, whereas 70 per cent. of tuberculous cases ended in external suppuration. Radiographic appearances in tuberculous disease of the hip varied so greatly that probably no one had a clear picture in his mind as to what appearances to expect in that disease. Even when cases cleared up there might be reason to suspect they might still be tuberculous. One supposedly tuberculous case he found had simply a cyst in the neck of the femur. Mr. Elmslie said the only way in which progress in this matter could be ensured was by a careful collection of clinical and radiographic observations of both tuberculous cases and other conditions which simulated them. He thought tubercle was such a frequent sequel to measles because the latter disease so lowered the general bodily resistance. He referred to the reports made occasionally of supposed success of a particular treatment in tuberculous cases, when there was grave doubt whether the cases were ever tuberculous. He hoped Mr. Todd would write descriptions of the various types of cases he had encountered, as a guide to others faced with difficult conditions.

Mr. A. **ROCYN-JONES** narrated some cases of difficulty which he had encountered, one being that of a child who had broncho-pneumonia, and soon after this cleared up both hips became swollen. When he saw the child some months later there was a scar over each hip, and the radiographic appearances were like those of tubercle; but it was shown not to be tuberculous. He thought it was very risky to depend on the radiogram; this must be taken with the history and the clinical course. A valuable sign of an early intra-articular lesion was the production of pain on performing rotation of the limb, though abduction and adduction might cause no distress.

The **PRESIDENT** said synovitis of the hip-joint due to trauma was apt to be forgotten. In doubtful cases his practice was to allow the child to walk about for a time, though if it was acute there must be periods of rest. If it was a mild case and not tuberculous, the rule was for the condition to clear up absolutely. Tuberculous synovial disease was very rare; there were two specimens of it at Great Ormond-street Children's Hospital. Both those patients came with subluxated hips, and there were no definite X ray signs apart from the dislocation, no erosion of acetabulum or head, and therefore they were not congenital dislocations. Both died of tuberculous meningitis. He was not familiar with the condition of juxta-epiphyseal strain apart from definite displacement of epiphysis; usually, he thought, there would be detected a small displacement of the head. With regard to endocrine disorders, Mr. Fairbank said a certain number of children with displacement of the head of the femur were slow in development, and sexually they were definitely behind the normal. The infective group of cases were most difficult to diagnose definitely. He blamed the *Staphylococcus aureus* for many of the puzzling and obscure cases. In Still's disease there was often trouble in the articulations of the cervical spine. Hip trouble which was primarily pneumococcal seemed to respond well to opening and washing out.

Mr. WHITCHURCH HOWELL said that during his association with an infectious fever hospital of 500 beds he only operated on three cases of arthritis in children, and in those, all under 3 years of age, it followed scarlet fever. One of them re-established complete range of movement, another had subluxation following and was walking with the aid of a calliper splint, while the third was stiff, short of ankylosis. Broca, in his last book, was emphatic that all cases of arthritis following measles were tuberculous.

Dr. KNYVETT GORDON, speaking as a pathologist, referred to the value of hæmological examination, not a mere blood count. Tuberculous cases invariably gave a blood picture differing from that of infected cases. In closed tuberculous cases (those having no sinuses) there was a leucopenia, with relative lymphocytosis, while in infective cases there was a polymorphonuclear predominance. There had been a remarkable reduction of cases of suppurative hip disease since mastoid operations were done in fever hospitals. He considered that bacteriological examination only was of little use for diagnosis; it should be followed by inoculation into a susceptible animal. Fluid from a tuberculous joint was usually sterile from an ordinary examination, but it killed a guinea-pig.

WAR SECTION.

A MEETING of this Section was held on April 6th, Surgeon Vice-Admiral JOSEPH CHAMBERS, the President, being in the chair.

Colonel J. CRAWFORD KENNEDY opened a discussion on

TUBERCULOSIS IN THE SERVICES.

He dealt with the matter from the statistical side, basing his work on the earlier reviews by Melville and Simpson. There appeared to be no detrimental influence in foreign service, the incidence of tuberculosis among soldiers being approximately the same at home and abroad. Between 1860 and 1906 there had been a very marked improvement, the total loss from tuberculous infection dropping from 9·2 to 2·2 per 1000. The factors underlying this were improved housing and surroundings; to a certain extent a lowering of the age of the army and changes in nomenclature might also have contributed. During those years there had been an improvement in the civil population of 50 per cent., while the improvement in the army was 80 per cent. In 1860 the death-rate was 9 per 1000, in 1914 it was 1·6; in 1921 it had risen slightly to 2, where it had remained steady. While better rationing, better housing and conditions of life, improved medical and general physical supervision, and more careful recruiting might all be mentioned as contributing factors, none of them was sufficient to account for the change, and it was to the reduction of the disease in the civil population that we must look for an explanation of its reduction in the army. Comparing the statistics, it was found that there was a slight balance in favour of the service up to 1914 and in favour of the civil population since 1921. The rejections for tuberculosis from recruiting stations were on the whole increasing, especially since recruiting began to tighten up in 1921 after the rather more lax regulations of the post-war years. It must not be forgotten that the material presenting itself for recruitment in 1920 was that which had suffered from war malnutrition at the most susceptible period of life—viz., 14-16—and was therefore more likely to develop subsequent infection. The wastage from tuberculosis had remained at a steady figure since 1912. The greatest incidence of the disease was seen between the fifth and tenth year of service, the figure being 4·1 per 1000; in later decades the figure was 2 or 3 per 1000, while during the first five years it was only 0·86. The curve for the age incidence rose steadily, reaching its maximum at 40, unlike the curve in civil life. The ratio of liability in the army to that in civil life had been as 1 to 7; it was now as 1 to 4, and thus there appeared to be a process of approximation taking place. In conscript armies on the continent the incidence was much higher.

Surgeon-Commander C. H. DAWE spoke of

Tuberculosis in the Navy.

Between 1891 and 1901 the incidence had been highest at the middle period of life, since then it had become higher in the young adults and much lower in the middle decade, while remaining about the same for the older men. Economic status and hygienic conditions had little effect on the young adult type; the problem of tuberculosis between 16 and 30 years of age was a problem of feeding. In the navy the rate followed that of the civil population. The life at sea was far from being ideal, but the efforts made to overcome the difficulties of diet had resulted in the marked decrease of the tuberculosis incidence in the decade 30–40. Malnutrition had little influence on the development of the disease in the later decades; that was a problem of wear and tear. There had been rather more tuberculosis in the navy in 1919–22 than in 1913; this was probably due to the results of malnutrition during the war period. Something might be done to make the change in environment less sudden and trying for some of the young recruits. The incidence in merchant seamen corresponded to that of naval men up to the age of 30 and then increased steadily with age. This was due to the wear-and-tear factor and the poorer hygienic conditions in the merchant service.

Wing-Commander H. A. TREADGOLD said that the statistics of

Tuberculosis in the Air Force

were of necessity few, but such as they were they confirmed the findings of the army and navy. There appeared to be no difference in the incidence of the disease in squadrons abroad and in those at home. This was strange, as the total sickness incidence was very much greater among the men on foreign service; they were subjected to much more trying conditions of climate, dust, and absence of fresh foods, and, although there were no figures, the general impression was that the incidence in the civil populations of the occupied regions was very high. The probable explanation was that the men abroad did not come into intimate contact with the infected civil population in the way that men at home did.

A paper by Fleet-Surgeon W. E. HOME giving the

Statistics in the Mercantile Marine

was read by the Secretary. In the year 1921–2 only one case of tuberculosis died in a sailing ship; the incidence in steamships was slightly higher, the lascars being more affected than white races. He quoted Sir William Osler's opinion that the tuberculous soldier brought the disease into the service with him.

Surgeon-Commander R. J. MACKEOWN agreed with this dictum and expressed the opinion that the standard of recruitment should be raised. He asked if recruiting medical officers examined the urine, investigated the history, especially of frequent colds, and cross-examined the patients as they should. It was not uncommon to find men in the services who had previously been in sanatoria. Every case of pleurisy should be looked on as a certain case of future pulmonary tuberculosis and removed. It was useless to send such cases back to the hardships of naval life after patching-up in hospital. He asked whether naval medical officers fully realised the dangers of early tuberculosis occurring in a crowded mess deck. The artificial means of aerating between-decks helped to spread infection if any was present. Something should be done to eliminate dust; the institution of vacuum cleaners would be of advantage.

Wing-Commander A. V. J. RICHARDSON referred to the dangers of dust. He asked whether the cases occurring about 25 were really primary infections or whether they were not due to the lighting up of an old infection.

Surgeon-Commander J. O'HEA said that the recruiting medical officer could hardly do more than examine the chest fully and exclude all cases of abnormality of any sort. The urine was tested in every case and the history investigated as far as possible, but it was difficult to elicit. Men would often say they had had no illnesses and had never been in hospital, and yet would admit that they had undergone a period of sanatorium treatment if that question were specifically put. All men who had had pleurisy or been exposed to a massive infection at home were rejected.

Surgeon Vice-Admiral Sir ROBERT HILL asked which ratings of the navy were most severely attacked by the disease. The limited sleeping accommodation must be accounted one of the chief causes of its spread.

Squadron-Commander J. MACDONALD spoke of the thorough examination carried out on recruits for the Air Force. The history could not be relied on, but any suggestion of tuberculosis was investigated. He asked whether X rays might not help in the assessment of the lung of the recruit.

The PRESIDENT said that every possible precaution was taken in the navy to detect early cases; there was periodical examination of the chests of all men and any doubtful case was sent to hospital for X ray examination. Reports were required as to the name of such cases, place of station, family history, rating; as to employment between decks, with particulars as to the ventilation of the deck concerned, a list of the ships in which the men had served; and information as to the general health of those ships and previous cases reported from them. Vacuum cleaners were being installed, and many other improvements designed to raise the standard of naval hygiene were in view.

Colonel CRAWFORD KENNEDY, in reply, said that careful recruiting had already eliminated the young-adult tuberculosis of the soldier. The cases which appeared between 35 and 40 could not possibly be eliminated by the recruiting medical officer. He did not think X rays would be of much use; the soft type of tuberculosis could not be recognised on the film and the fibrotic type seen there might never break out again. The Americans used X rays a good deal, but insisted that only a stereoscopic view was of any value. That the factor of intimacy with the civil population was one of importance was evidenced by the fact that the incidence was particularly high in the Armies on the Rhine.

Surgeon-Commander DAWE pointed out that 60 per cent. of naval recruits entered between the ages of 14 and 16, when the tuberculosis incidence was very low. The rates for seamen and stokers were identical, that for the marines slightly higher. The ratings varied from year to year in the number of cases reported. An exhaust system of ventilation would probably be more satisfactory than the present supply system.

Reviews and Notices of Books.

ANTHROPOLOGY.

The Origin of Man. By CARVETH READ. Cambridge University Press. 1925. Pp. 100. 5*s.*
Man and His Superstitions. Same author and publishers. Pp. 278. 12*s.* 6*d.*

THESE two books form together a second edition of "The Origin of Man and of His Superstitions," which was originally published in 1920. They have now been separated with some advantage, for in the first those who are chiefly interested in man's physical development may read, at a surprisingly moderate cost, a most interesting account of the ideas of the late professor of philosophy and comparative philology at University College as to how man comes to be so different from the anthropoid apes.

Prof. Read's theory is, briefly, that early, let it be called pre-human, man got a taste for animal food and took to hunting in packs like wolves. In this way his legs developed in comparison with his arms, he left the forest and took to running in the open instead of shuffling about in and under the trees. To hunt successfully needs numbers and organisation, and hence these men came to form considerable communities which were under the control of those who were marked out as leaders by their obvious success in the chase. Emerging from the same stock the ourangs and chimpanzees have made much less progress because they have not faced such difficulties, and from the lower apes, which often live in communities, they have developed into solitary or at most familial groups content with vegetables and more apt at defence than attack. The pack must be clearly distinguished from Mr. Trotter's herd, aggregated for mutual comfort and protection: *Lycopithecus* was like a wolf rather than a deer, which may explain, among many other things, the foul savagery which, as medical men know better than most, is in us all. Prof. Read's exposition is singularly clear and readable, punctuated with many wise and witty remarks, and he puts his case with a persuasive moderation which leaves his thesis among that delectable list of topics which can be discussed for ever and never solved.

In "Man and His Superstitions" the author carries on his account of how the wolf pack grew into a settled human society. So long as the pack hunted, empirical success in getting food indicated who was the leader by considerations which made a convincing appeal to everyone's stomach. But when they grew so skilful in the chase that they had time to think of kennels, so to speak, all the problems of the leisured human life began to arise and not least among them the problem of government. In Prof. Read's view, there were men shrewd enough to make use of the beliefs in magic and animism, which were then appearing on the human horizon, to give them prestige enough to maintain the necessary custom and tradition: the chief huntsman was replaced by the magician, who in turn grew into a wizard-king or a priest-king or a king supported by wizards and priests. Hence the fundamental importance of superstition in the subsequent development of man and hence its prevalence to-day. The author discusses then magic, animism, wizards, omens, totemism, and all the allied vagaries, as they seem to us, of the human mind. It is a very strange tale and makes us wonder whether we are really much more rational than the Australian natives described by Spencer. Prof. Read seems doubtful and of the future he will hazard nothing.

CHRONIC APPENDICITIS.

Les colotyphlites et le syndrome de la fosse iliaque droite. Par le Docteur A. C. GUILLAUME. Paris: G. Doin. 1924. Pp. 386. Fr.35.

MOST surgeons will be agreed as to the extremely unsatisfactory nature of "Chronic Appendicitis" as a diagnosis. It is true that occasionally the removal of a fibrotic appendix produces a remarkable cure, but too often a temporary relief is followed by recurrence of all the former symptoms. Pain in the right iliac fossa is one of the commonest complaints, but Dr. Guillaume is so impressed by its doubtful pathology and the extreme uncertainty of a precise diagnosis that he simply describes the condition as "the syndrome of the right iliac fossa." From this standpoint he discusses the many possible pathological conditions which may be associated with this syndrome, and although he arrives at no very definite conclusion the monograph is of considerable value. It consists for the most part of a critical examination of the literature of the subject, and the thoroughness of his research in this direction may be gauged by his bibliography which extends to over a thousand references. Criticism throughout is trenchant and well founded, and he illustrates his views by numerous examples drawn from his own practice. The book should be of real value to students of intestinal stasis and of chronic abdominal pain.

THE DEGENERATIVE DISEASES.

By LEWELLYS F. BARKER, M.D., Professor Emeritus of Medicine, Johns Hopkins University; and THOMAS P. SPRUNT, M.D., Associate in Clinical Medicine, Johns Hopkins University. London and New York: Harper and Brothers. 1925. Pp. 251. 15s.

THE progressive campaign for health which has been one of the most striking achievements of the first quarter of the twentieth century has tended to concentrate its efforts on the communicable diseases and lately upon the ante- and post-natal care of the child. A study of the mortality statistics shows that certain chronic diseases of later life still continue their ravages unchecked. In this recent addition to the public health series edited by Dr. Allan J. McLaughlin, Prof. Barker and Dr. Sprunt show how these degenerative diseases may be added to the field of public health activity. "Obviously," they write, "from their nature, the degenerative diseases of senescence cannot be prevented except by the barbarity of destroying life before this stage has been reached. Indeed, one ideal of preventive medicine might be to prevent all other diseases and to permit all men to die in the fullness of years a 'natural' death from some degenerative condition. The problem of hygiene in regard to this field is to postpone the inauguration of the degenerative change, to retard its progress, to avoid, if practicable, certain expected complications, and to promote as far as possible the comfort of the patient." Such a problem will be solved by intelligent coöperation between the health worker and the community, and the aim of this book is to educate "that highly intelligent group of people made up of physicians, lawyers, clergymen, teachers, social workers, clubwomen, business men, business women, and others who are leaders of thought and opinion."

A popular book on health should be interesting, it should present the facts without prejudice, and persons of ordinary intelligence should be able to grasp the significance of the facts thus put before them. This book fulfils all these conditions. It begins with a section on the general considerations of the causes of these degenerative diseases and the rôle of heredity and environment in their production. The principles of prevention and postponement of these diseases are then set out with reference to eugenic and euthenic factors, and in the latter connexion due stress is laid on both external and "internal" environment. The subdivision of internal environment denotes the influences playing upon the organs and cells of the body arising through the activities of other cells or organs of the same body, and it serves to link up the external influences of air, food, and water, for example, on the one hand and the products of disordered metabolism on the other. The third section, comprising about one-half of the volume, deals with the special degenerative diseases. Portions dealing with auto-intoxication, focal sepsis, alcohol and tobacco, and the endocrine organs are in particular marked by a sane and restrained attitude; the facts are presented with a complete absence of the sweeping dogmatism so common in books of this nature. If the chapters on the special diseases appear a little more technical than one would have expected it must be remembered that the authors have written this book for a particularly intelligent section of the community.

ELECTRO-THERAPEUTICS.

Die Diathermie. Fourth edition. By Dr. JOSEF KOWARSCHIK, Primararzt und Vorstand des Institutes für physikalische Therapie im Kaiser-Jubiläums-Spital der Stadt Wien. Wien und Berlin: Julius Springer. 1924. Pp. 231. M.120.

SINCE the appearance of the preceding edition of Dr. Kowarschik's work on diathermy in 1921 the therapeutic field of diathermy has been considerably widened. The present edition has been enlarged by the addition of 65 pages and 19 illustrations. To the section dealing with the non-surgical uses of diathermy the author has added accounts of his own experience and that of others in the treatment of diseases of tendon sheaths and bursæ, of anterior poliomyelitis and paralysis, of occupation neuroses, of exophthalmic goitre, of vaso-motor disorders, of diseases of women, and of certain affections of the skin; the last named include varicose ulcers, frostbite, scars and chronic ulceration caused by X rays. The author is convinced of the value of diathermy in the treatment of amenorrhœa and dysmenorrhœa (when there is no organic disease of the pelvic organs) and of chronic inflammation of the uterus and its appendages. The section dealing with surgical diathermy has been enlarged, though scarcely in proportion to the importance of the subject or the space allotted to other branches of the treatment with which the book deals. In the section on electrotechnics are given particulars of diathermy machines which were not described in the previous edition. One of these is a model by an English firm. The principle of the production of sustained high-frequency currents with the aid of the hot cathode valve is described. Dr. Kowarschik's work has thus been brought up to date. It gives a brief though concise account of the subject of diathermy, and the author makes no undue claim for its therapeutic value. The book is well printed and clearly illustrated, and a full bibliography has been added.

PATHOGENIC MICRO-ORGANISMS.

Eighth edition. By WILLIAM HALLOCK PARK, M.D., Professor of Bacteriology and Hygiene, University and Bellevue Hospital Medical College; ANNA WESSELS WILLIAMS, M.D., Assistant Director of the Bureau of Laboratories of the Department of Health; and CHARLES KRUMWIEDE, M.D., Assistant Director of the Bureau of Laboratories. London: Baillière, Tindall and Cox. 1925. Pp. 811. 30s.

THIS text-book, which has long been a standard American work on bacteriology, has been considerably enlarged and to some extent rearranged. The book, however, retains its familiar form and those features which have given it a well-deserved popularity. It is becoming, each year, more and more questionable if it is desirable to include a large section on methods in general text-books, since these are now so thoroughly dealt with in separate publications. In this book some 80 pages, or about a tenth of the volume, are occupied by this subject. It would be a pity altogether to lose this section, as it is ably written, but its separate publication might be worth considering since the size of the volume is steadily increasing. This edition includes a summary of all the recent advances in bacteriology, including the d'Herelle phenomenon, the work of Olitsky and Gates in influenza, and of George and Gladys Dick and others in scarlet fever, as well as Prof. Park's own most recent results in active immunisation against diphtheria. The section upon immunity and the serum reactions still remains one of the best in the book. The general get up and binding are perhaps not quite so pleasing as in earlier editions and some of the blocks are showing signs of wear.

The book still remains one which, being based upon wide experiences, can be safely recommended as authoritative and trustworthy.

THE LABORATORY BOOK OF DAIRY ANALYSIS.

Third edition. By H. DROOP RICHMOND, F.I.C., Chief Analyst to Boots Pure Drug Co., Ltd.; late Analyst to the Aylesbury Dairy Co., Ltd. London: Charles Griffin and Co. 1925. Pp. 118. 5s.

THIS laboratory guide to all the common analytical processes likely to be encountered in routine dairy-work has reached its third edition. We are happy to repeat the statement made in these columns in respect of the last issue—namely, "the book is the *best contribution on the subject that has yet appeared* in the English language." For a laboratory guide to technique the volume could be held up as an example to other authors about to write a book on similar lines. The descriptions are very brief, and although no word is wasted, the accounts are complete and workable. Logarithm tables, and an account of the "Dairy Scale" are included to simplify calculation. The book is divided into six chapters dealing with introductory matter, the analysis of milk and of its products, and their applications, and of butter and cheese. In an appendix the methods for the preparation of standard solutions have been described.

Medical men responsible for chemical pathological routine work in general hospitals have probably not been regarded as an audience by the author, but workers in this field are often confronted with problems involving milk analysis, and are frequently questioned as to whether a certain dried preparation is made by the roller or by the spray process. The medical chemist has also to analyse human milk, which is quite a different problem from cow's milk. Mr. Richmond might bear these points in mind when he prepares his fourth edition.

DR. CHAVASSE'S ADVICE TO A MOTHER.

Nineteenth edition. Revised by G. T. WRENCH, M.D., Past Assistant Master, Rotunda Hospital, Dublin. London: J. and A. Churchill. 1925. Pp. 316. 2s. 6d.

THE fact that this well-known little book has reached its nineteenth edition and its 370th thousand is sufficient testimony to its value, proving that it is easily understood and essentially practical. The chapters on the feeding of infants have been rewritten and certain other portions revised in accordance with the recent progress of medical science. Dr. Wrench advises, in his preface, that a mother should familiarise herself with its contents so as to be able to turn to the section she requires in time of need. A good index facilitates this. The new portions are quite in keeping with the modern teaching on infant feeding, and most of the methods recommended have been extensively tried by the reviser.

BIOLOGY.

A Text-book of Biology. Fifth edition. By W. M. SMALLWOOD, Ph.D. London: Baillière, Tindall and Cox. 1925. With 249 text figures and 3 plates. Pp. 393. 16s.

THE author is professor of comparative anatomy in the Liberal Arts College of Syracuse University, New York, and his book is intended "for students in general, medical, and technical courses." The first 113 pages are given to a study of the anatomy and physiology of the frog, the next 49 to unicellular organisms: there follow a few more "types" and then 132 pages on theoretical interpretations, evolution, genetics, adaptation, parasites, and so on. The plan is unconventional and is perhaps a good solution of the difficult problem of devising a satisfactory course in biology for the arts student: it has evidently met with approval. Our criticism of its execution in this particular case is that the treatment is not disciplinary enough: familiarity with all the contents would give a facility to talk about biology in its most modern aspects, but it would guarantee no sound knowledge of its fundamentals. There is too much about Mendelism and death-rates from infectious diseases and too little comparative anatomy. The miraculous X Y Z often seems to be preferred to the majestic A B C in American education. Let it be admitted that the preference has its drawbacks, it also has its virtues.

Biology. By PATRICK GEDDES and J. ARTHUR THOMSON. London: Williams and Norgate. 1925. Pp. 251. 2s. 6d.

EVERYONE will welcome the active resumption of the splendid Home University Library, though it must be confessed that this will hardly rank as one of the best volumes. To write on biology in a small compass is obviously a difficult task, and one asking for a nice selection of the topics which are to be dealt with and the readers who are to be addressed. The authors have devoted their space to a very generalised treatment and have written in such a style that no one without a tolerably good knowledge of zoology and botany will be able to understand all the casual and implicatory references which abound. And technical equipment will not guarantee that readers will always understand what is meant. There is in many parts a vagueness about the argument, sometimes about the individual sentences, which raises a little suspicion that the authors have not defined clearly to themselves what they intend to convey. The chapter, for example, entitled "What is Life?" reads pleasantly enough until one attempts a mental summary. Biology is of course in parts a vague sort of subject, and great mysteries no doubt need mystical treatment. But in parts it is precise enough, and a greater proportion of the commonplace would not have seriously dimmed the prevailing tone of the book, which is a buoyant optimism that the world is a wonderful place and a harmonious whole in which the amœba and town-planning both have their related places. Perhaps, too, the authors have found the difficulty which is a constant obstruction to progressive minds—the fact that the evolution of meanings is always in advance of the evolution of words.

JOURNALS.

TROPICAL DISEASES BULLETIN.—The issue for March, 1925, is full of useful information, of which Dr. C. M. Wenyon has supplied the greater portion. He has reviewed the recent literature of relapsing fever and other spirochætoses, rat-bite fever, and infectious jaundice. To kala-azar there are devoted some 19 papers, of which those dealing with the transmission of the disease by the sandfly—*Phlebotomus argentipes*—by R. Knowles, L. E. Napier, and R. O. A. Smith, are the most important, for it would seem that this long-contested problem is on the eve of being solved. Leprosy is adequately treated by Leonard Rogers, and tropical dermatology by W. Jenkins Oliver. There is a review of recent articles on rabies by A. G. McKendrick which will be found opportune.

THE monograph entitled General Systematic Bacteriology, by Prof. R. E. Buchanan, reviewed in THE LANCET of April 11th, is obtainable in this country from Messrs. Baillière, Tindall and Cox.

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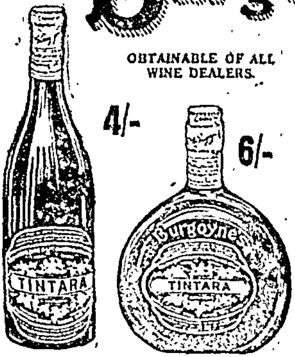

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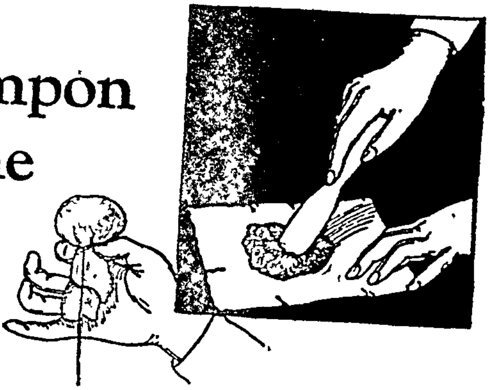

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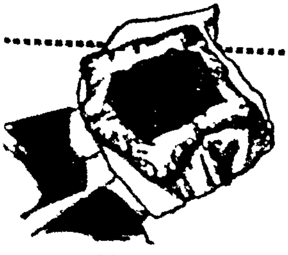

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THE LANCET.

LONDON: SATURDAY, APRIL 18, 1925.

IODINE IN EXOPHTHALMIC GOITRE.

THE relationships between enlargement of the thyroid, hyper-thyroidism, and the iodine content of the thyroid have given rise to much discussion and to a large volume of experimental and clinical work. As far back as 1820 it was first realised that endemic goitre was often associated with a low iodine content of the gland, and that a great improvement—if, indeed, not a complete cure—could often be achieved by the administration of small doses of iodine. It has long been known that endemic goitre has a geographical distribution, and it is probable that this is due to the fact that there is but little iodine distributed in these areas. This, however, is not the sole factor, and MCCARRISON[1] has shown that in certain conditions—especially those occurring in the sexual changes in women—the iodine requirements may be much in excess, and thus, although the available quantity of this substance may be up to the normal standard there is insufficient for the immediate needs of the patient. In many infective and other conditions, also, the available quantity of iodine cannot be utilised, and thus the patient again suffers from a deficiency.

The balance of experimental and clinical evidence supports the view so strongly held by the late Prof. KOCHER, that the symptoms of exopthalmic goitre are due to hyperthyroidism and that the administration of iodine in considerable doses in cases of simple goitre might change the picture to one of hyperthyroidism. The chemical investigations of DE QUERVAIN[2] have shown also that many of the characteristic varieties of exophthalmic goitre are associated with a high iodine content both as regards the percentage and the total amount. For these reasons it has always been considered unsafe to give iodine or iodine-containing preparations in any form of goitre in which there was evidence of hyperthyroidism. It is of interest to note, however, that in certain varieties of exophthalmic goitre DE QUERVAIN found that the iodine content of the thyroid gland was low, and often, indeed, lower than that found with colloid goitre. Last year PLUMMER and BOOTHBY[3] first put forward the view that even with hyperthyroidism there was often an insufficiency of iodine, and F. R. FRASER,[4] working at St. Bartholomew's Hospital, has found that generally the greater the hyperplasia of the gland the lower the iodine content. For these reasons PLUMMER and BOOTHBY advocated the administration of some simple form of iodine in the treatment of exophthalmic goitre. Six hundred cases were so treated, of which 43 were studied carefully. Iodine was given in the form of Lugol's solution—that is, a 5 per cent. iodine and 10 per cent. potassium iodide, ten drops daily being administered. From the result of their experiences they state that approximately two-thirds of the patients will be greatly benefited, one-quarter slightly benefited, and 1 in 20 not benefited. MASON[5] states that he has had a similar experience with Lugol's solution, but emphasises the fact that the symptoms increase as soon as the treatment is stopped. STARR, WALCOTT, SEGALL, and MEANS[6] also note the temporary character of the improvement and that in some cases no effect was observable. The observations of FRASER led to very similar conclusions. He found that in many cases there was an enormous improvement following the administration of some simple form of iodine. The basal metabolic rate and the pulse both fell considerably and the weight increased; nevertheless the patients were only relieved and not cured. Any mental upset or stress would often reproduce the exaggerated symptoms. If too large a dose were given the symptoms would be increased instead of alleviated, and as soon as the administration was stopped the symptoms would all return. HYMAN and KESSEL[7] did not agree with these findings and were of the opinion that any improvement which took place was due to the rest and general medical treatment, and that if such treatment were carried out for a period of six weeks and the iodine then administered progress was no more rapid than, if indeed as rapid as, it had been before the administration was commenced.

The article published by Dr. A. S. JACKSON in THE LANCET of April 11th now records observations carried out on 63 patients with exophthalmic goitre treated at Madison, Wisconsin. In this group of cases which were all subjected to operative treatment, there were no surgical mortalities, neither were there any medical deaths. No patient had been refused operation. The author regards the successful treatment of this group as being attributable to the use of iodine. He found that not only did the patient's condition greatly improve, but the post-operative hyperthyroidism was thereby almost entirely obliterated. Proceeding cautiously at first and giving only ten drops of Lugol's solution daily for a period of three months or longer he found that although there was marked improvement there was no clinical cure. The progress was, however, so satisfactory that preliminary operations such as ligation were reduced in number and thyroidectomy was carried out at the first stage. As time went on the dosage of Lugol's solution was increased until 30 drops a day were given up to 48 hours before operation, when the dose was increased to 40 or even 50 drops. He states that now the patients are frequently allowed to take the Lugol's solution at home and submit to operation on the morning after entering hospital. By post-operative administration the progress was rapidly increased, so that many were up and about on the fourth day and usually were allowed to leave the hospital on the fifth or sixth day, but this did not include cases with decompensated hearts and visceral degeneration. The clinical improvement in the pre-operative course is often remarkable, the rapid and almost choreic movements cease almost at once, and from nervous and anxious patients they pass to a condition of calm and quiet composure. The pulse-rate is noticeably slowed and the patients rapidly gain in strength. He states, however, that other factors are of importance in the great reduction of operative mortality, among which he would class satisfactory team-work and the performance of the operation earlier in the stage of the disease. He lays special stress upon the rapid improvement and upon the fact that none of these patients were hospitalised for an average of more than five days.

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[1] McCarrison, R.: The Thyroid Gland, London, 1917; Simple Goitre, Brit. Med. Jour., 1922, i., 178.

[2] de Quervain, F.: Goitre, London, 1924.

[3] Plummer, H. S., and Boothby, W. M.: Jour. Iowa State Med. Soc., 1924, 1166.

[4] Fraser, F. R.: Iodine in Exophthalmic Goitre, Brit. Med. Jour., 1925, i., 1.

[5] Mason, E. H.: Canadian Med. Soc. Jour., 1924, xiv., 219.

[6] Starr, P., Walcott, H. P., Segall, H. N., and Means, J. H.: Arch. Internal Med., 1924, 34, 36, 355.

[7] Hyman, H. T., and Kessel, L.: Archives of Surgery, 1924, viii., 149.

If these claims are corroborated a great advance will have been made; as yet they can hardly be accepted in their entirety. We understand that at the London Hospital this method of pre-operative preparation has been carried out for some time, and the results there obtained are almost entirely in accordance with those published by FRASER—that is to say, that there is as a general rule a great improvement following the administration of Lugol's solution, but that a small dose only must be given, the routine dose being ♏ iii. of Lugol's solution three times a day. Moreover, after a short period, often indeed after 10–14 days, the effect of the iodine solution begins to wear off and the patient relapses. If an operation has not been carried out before this the administration must be stopped, when the patient will again begin to improve. If too large a dose is given there has so far always been clear evidence of an exacerbation of the symptoms. This is usually at once shown in the rise of temperature, the pulse-rate, and even in the respirations, so that an estimation of the basal metabolic rate may not actually be necessary. Since such methods of treatment have been tried there has been no post-operative mortality, but in no case, so far, has the care which had previously been exercised in the pre- and post-operative treatment been relaxed. Thus, in no case is an operation performed the day after the patient entered the hospital, as advocated by Dr. JACKSON. Each patient is kept in bed for at least two weeks and never allowed home so early as the fifth or sixth day, although it is already evident that the post-operative reaction is very greatly diminished by the administration of the Lugol's solution It may thus be accepted that the administration of some form of iodine not only gives rise to great temporary improvement in the patient's condition, but it lowers the mortality rate and diminishes the post-operative hyperthyroidism. Whether it will cause so great a temporary improvement that operations can be performed in absolute safety, so that the patient can be allowed back to work as shortly after operation as is claimed by Dr. JACKSON, remains for future investigation to decide.

PATENTED MEDICINE.

DURING the past few years we have frequently had occasion to discuss in these columns the broad question of payment for research, and we recently[1] quoted in this connexion the opinions of the National Union of Scientific Workers of Great Britain and of the Privy Council Committee for Scientific and Industrial Research, who alike condemned the rewarding of successful research by money prizes or by the granting of patent rights. Nevertheless, there is at the present day a definite development of the feeling that scientific discovery must eventually be protected against commercial exploitation. Just how this will be brought about is still a matter for speculation, but it is quite possible that some system of patenting, with or without royalties, may be elaborated and brought into action in the future and a fierce controversy will probably rage around these two words. Medical research is obviously to be included under the general heading of scientific discovery, and while any system of patenting seems quite foreign to accepted medical methods, at any rate in this country there have been certain developments within recent years which merit closer attention.

A few years ago the Medical Research Council investigated the various commercial preparations of pituitary extract and found that this valuable drug varied enormously in its potency as supplied by different manufacturing companies. It became obvious that some sort of control was necessary, for such biological preparations are unrecognised by the British Pharmacopœia, since, as the President of the General Medical Council has pointed out, drugs can only be included of which the standardisation can be carried out by a competent chemist. Some biological standards were obviously necessary and their control was handed over to the Medical Research Council in 1921. These standards have been welcomed by the better class of manufacturers who are left free to produce with the minimum of interference as to standardisation. The example of pituitary extract becomes important in view of what subsequently happened in the case of insulin. Here it will be remembered that the University of Toronto patented the name and the process of preparation of insulin, and the Medical Research Council accepted the patent rights in this country as a gift from Toronto. This action was criticised at the time on the grounds that it would limit enterprise and restrict experiments with insulin in this country. In point of fact, it has been abundantly shown by subsequent events that the highest interests both of the public and of the medical profession in this country were being served, for by this action a supply of pure insulin was available for use in circumstances where its action could be watched by competent observers; and on the other hand, exploiters and ignorant or unscrupulous persons were prevented from putting on the market an impure supply of the drug, which would have greatly discredited the reputation of the real insulin. The Medical Research Council has been free from the difficulties of a widely varying commercial supply, as in the case of pituitary extract, and has been able to supervise the production of insulin in a broad and liberal manner. The apprehension which was felt and very freely expressed with regard to insulin was partly due to the use of the word "patent," which conveys the idea of restriction for private gain. It has been suggested that in Germany, where many bacteriological products have been patented, the cost of salvarsan was enhanced by royalties, and in America steps have been taken in some instances by the authors of articles in scientific journals, which might have some commercial value, to protect themselves by applying for letters patent. This seems regrettable, but how else can the public be protected from the commercialisation without due restriction of new lines of research? Some form of protection may be necessary to safeguard the public as well as the researcher.

Perhaps the word "protection" is preferable to "patent" in this connexion, for here they appear to mean much the same. The question of royalties is naturally a thorny one. We gave some account of the possible development of such a system recently[2] when the proposals of Senator RUFFINI to the Committee of Intellectual Coöperation of the League of Nations were discussed. From the medical point of view the difference then pointed out which exists between literary copyright and the protection of scientific research is interesting. The hospital physician, for example, may embody the results of his clinical experience in a book for which he will be paid and on the sale of which he will enjoy presumably a certain amount in royalties. No one suggests that such action is contrary to accepted medical ethics. His colleague, the pathologist, who has, we will suppose, no desire to write but who is a brilliant investigator, discovers in the hospital laboratories a specific drug for some hitherto incurable disease. Under existing circumstances some drug house will market this in the interests of the public and naturally at profit to themselves. Although both these men may be remembered by posterity for an equal number of years, this will scarcely compensate for the difference in material reward which they receive during their life-times, a difference which may probably be also appreciable in their respective incomes, even if the hypothetical event had not taken place. Nor is this futile speculation: the problem of the effective protection of the research worker and of some adequate means of rewarding him is one which demands pressing attention, and however objectionable the terms patent and royalties may sound it seems probable that some system of "patented medicine," consistent with the accepted medical principle which puts the interests of the public first, will have to be devised in the not far distant future.

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[1] THE LANCET, 1924, ii., 1241.

[2] THE LANCET, 1925, i., 613.

SCIENTIFIC QUESTIONS IN CRIMINAL APPEALS.

WHEN the Court of Criminal Appeal was set up in 1907, Parliament equipped it with power to summon medical assessors and to refer for decision by a special Commissioner any question involving a "scientific examination which cannot in the opinion of the Court conveniently be conducted before the Court." This provision, though the Court was invited to apply it upon the recent appeal of NORMAN THORNE, has virtually remained a dead letter. The Criminal Appeal Act of 1907 says that the Court may take this course "if they think it necessary or expedient in the interests of justice," and that the reference to special Commissioners shall proceed in accordance with rules of court. The rules were duly made, but have seldom or never been brought into play. They ordain that the Court, in referring any question, shall specify the question exactly and shall name the Commissioner who is to answer it. The order remitting the matter to him may declare what powers (if any) of the Court of Appeal are being delegated. The request for the setting in motion of this machinery in THORNE's case was rather summarily rejected. The application was described as "unparalleled," and, indeed, the whole appeal was dismissed without counsel for the Crown being called upon. The issues which it was suggested should be referred to a special Commissioner were the same medical issues as had arisen at the trial. The questions related to such matters as the existence and significance of marks upon the dead woman's neck, the extent of the pulping of the tissues, the probability or improbability of suicide on the part of an apparently neurotic patient, and so on. What was fatal to the application was just this fact that medical evidence on these very points had been fully given by experts both for the Crown and for the defence at the trial. It may be that juries are not the best tribunals for weighing and judging between the conflicting views of experts, but Lord HEWART has now made it clear that the Court of Criminal Appeal is not going to transfer to a medical referee "the determination of a question on which the jury, with conflicting views before them, has arrived at a unanimous conclusion."

In a proper case, Lord HEWART observes, the Court will use its "special and exceptional" powers of referring scientific questions to a Commissioner. We are left unenlightened as to what conditions will constitute a proper case. There can never, it seems, be a proper case for such a reference on appeal if full medical evidence has been given at the trial. The only occasion, therefore, in which a special Commissioner or a medical assessor is likely to be called in on appeal is the case where medical evidence has been improperly curtailed or rejected by the Court below, or where some medical issue arises unexpectedly after trial. We might perhaps add that the calling in of a medical assessor is the more remote so long as our official experts maintain the excellent tradition of giving evidence with impartiality and detachment, coming to be regarded almost as judicial officers of the Court rather than witnesses for the prosecution.

The Lord Chief Justice gave his judgment in the THORNE case with his accustomed clearness. The fact stands out that, if there is sufficient evidence—whether of a scientific or a non-scientific nature—upon which a jury can convict, and if a jury does convict thereon, the Court of Criminal Appeal is not going to invite anybody else to say whether or not he agrees with the jury's conclusions. The case against THORNE was essentially one for a jury. There was, says Lord HEWART, overwhelming evidence on which they might have returned the verdict they did. Once that fact is accepted, there was really no ground for the appeal, were it not that by a kind of forensic convention an appeal takes place almost automatically in all cases of death sentence. Twice lately Lord HEWART has pointed out, as he did here, that there was nothing in the appeal except the circumstance that it related to a charge of murder. Medical opinion will, we think, admit that the scientific evidence had satisfactory exposition and consideration in the Crowborough murder trial. There is undoubtedly a possibility that, if a jury's decision were lightly to be disturbed either by the Court of Appeal or by a scientific tribunal, juries might be tempted to slur their duties and to abandon the good old tradition of giving the prisoner the benefit of the doubt.

CARDIAC SURGERY ON ANIMALS IN THE FIELD.

A CONDITION described as traumatic pericarditis is well recognised by practising veterinary surgeons. Cattle especially are the subjects of this disability on account of their habit of picking up pieces of wire, knitting needles, nails of various patterns, and other foreign bodies when grazing, and as these foreign bodies are forced along during the act of rumination they have ample opportunity for penetrating the rumen in a particular place, after which they find their way into the pericardial sac, and even to the heart muscle. A number of cases in which foreign bodies have been extracted from the heart of the cow by direct operation are reported by Mr. Leslie P. Pugh in the March issue of the *Veterinary Journal*. A photograph is shown which was taken nine months after such an operation on a very valuable pedigree Guernsey cow, which made an excellent recovery; since the operation she has been giving as much as three gallons of milk daily, and is now again pregnant and in excellent health. To perform cardiac surgery successfully on a farm animal under field conditions is a totally different problem from that of performing it experimentally under the advantageous conditions available in the laboratory, and Mr. Pugh may be congratulated upon the pioneer work which he has done for veterinary science.

Annotations.

"Ne quid nimis."

CICELY NORTHCOTE TRUST.

IN a modest little document[1] of 24 pages, issued from the Lady Almoner's Department of St. Thomas's Hospital, is told the story of a side of hospital work which ought to be better known to the public; for it abundantly demonstrates that often the most efficient hospital treatment among the poor neither begins nor ends in the wards. Where help is not given, sometimes before, sometimes after admission, and sometimes at both periods, discharged patients may often drift back to hospital, with the result that previous treatment is wasted, unnecessary expenses are incurred, and deserving patients are kept on the waiting list. The activities of the Northcote Trust are concerned with the adjustment of family life caused by illness, with the provision of surgical instruments and appliances, with convalescent treatment, and with the equally important work of after-care. The report is illustrated by typical cases which speak eloquently for the work being done. One of the most important aspects of this work is connected with a hostel which was opened in 1920 as a home for women and girls suffering from venereal disease. This hostel has accommodation for 14 adults and four infants, and during the past year 44 girls and 16 babies have been in-patients. The aim of the hostel is to create for the visitors a real home where, besides receiving physical healing, the girls may learn something of their responsibilities and privileges as members of a family, neighbours in a community, and citizens. In this connexion it may be noted that Colonel L. W. Harrison recently urged the institution of a home for mothers and babies on their discharge from the V.D hostel from which the mothers could go out to work, leaving the baby under supervision during working hours. The Cicely Northcote Trust coöperates with some 70 other societies and agencies. The work is increasing by reason of the larger number of patients passing through the wards of St. Thomas's Hospital, and is also being added to by new activities of the hospital involving extension in diabetic diets and the provision of insulin. A continuous supply of this drug has been arranged for many patients. Financial help is greatly needed if the growing work of the Trust is to be done as effectively as its importance demands.

CONJUGAL TUBERCULOSIS.

DURING the last few years many important investigations into the problem of conjugal tuberculosis have been published, and the work of Dr. E. Ward and others has done much to show that, under certain conditions, the risk of infection of one partner by the other is not negligible. This is the lesson of a paper published recently by Dr. H. Tecon in *Paris Médical*. His conclusions are the more interesting as they are based on observations made not only among the institutional patients, but also in his private practice. The number of families studied was 182, and in each one partner at least was sputum-positive. In about 90 per cent. of all the cases husband and wife still shared, or had recently shared, a bed. In 50 per cent. of all the cases the tuberculous husband or wife had not, apparently, conveyed the disease in a clinically manifest form to the other partner, but this immunity was not enjoyed by the children, and as one of Dr. Tecon's family histories shows—and he records it as an example typical of many—the chances of husband or wife infecting the other partner are very much less than the chances of a tuberculous parent infecting one or more of the offspring. The chances of conjugal infection are certainly not small to judge by the following figures. In as many as 60 of the families investigated, there was evidence of the one partner having been infected by the other. In another 17 cases, infection of one partner by the other could not be so clearly proven as there were other possible sources of infection. Of the 90 cases already referred to, as many as 63 were cases of infection of the wife by the husband—in other words, as great a proportion as 70 per cent. of all the cases of proven conjugal tuberculosis represented infection of the wife by the husband. This sex difference in the risk entailed by marriage with a consumptive would seem to depend on many factors, chief among which may be the wife's seclusion throughout most of the day to the infected house; the husband in most cases spends a relatively short period of the 24 hours at home. Another factor which Dr. Tecon omits to discuss in this connexion is the wage-earning capacity of man and wife respectively; if the first partner to develop tuberculosis is the husband, the daily bread of the couple will usually be more reduced than would be the case had the wife been the first to develop this disease. A comparison of the course of the disease, according as it was conveyed by husband to wife or by wife to husband, did not indicate any great differences, and it is noteworthy that, only with rare exceptions, the site of the disease in the second partner was also the lungs. Turning from the statistics, Dr. Tecon discusses their application to the problem with which a medical man is confronted when his opinion is invited on a prospective marriage one potential partner to which is tuberculous. Dr. Tecon is wise enough not to generalise, and he recommends the discrimination which judges each case on the particular circumstances involved.

PATHOLOGY IN GENERAL PRACTICE.

THE evils resulting from the lack of coöperation between the clinician and the pathologist are common subjects of discussion in most enlightened medical circles, but unfortunately the conversations seldom lead to any attempt to rectify the situation. In general practice in this country pathology means little more than routine examinations of blood, sputum, urine, and so forth. Only very rarely are post-mortems done in private practice, which is merely another way of saying that, except in some cases where a surgical operation is the penultimate event, the ante-mortem diagnosis is only very rarely controlled. In this matter America appears to be leading the way, for in a recent number of the *Medical Journal and Record* Dr. W. W. Waite,[1] of El Paso, Texas, reports the formation of a small society for the study of pathology by general practitioners, the objects of which deserve high praise.

Dr. Waite and his colleagues, realising that medicine cannot be scientifically followed if divorced from pathology, have formed among themselves a small group for the purpose of performing autopsies on patients dying in their practices, and for studying the material obtained thereby. The group is limited to about a dozen members, for it is felt that this is the largest number which can work round a body and see all there is to be seen, and can meet together regularly for close study. The organisation of the group is quite loose—there are no officers, though the pathologist acts as director—each member does what he can to serve the common object, and with increasing experience becomes capable of performing autopsies for himself and carrying out the further necessary investigations. Time being of importance, only brief clinical histories are given at the actual autopsies, but at the regular meetings the cases are discussed in detail. Full clinical histories are given, the pathological findings are carefully scrutinised, and microscopic preparations are projected on to a screen, a part of the proceedings which has proved to be extremely popular. The best specimens are saved, and a museum is being formed which, it is believed, will be of real educational value. At these meetings discussion is free and pointed. Good work may be commended, but imperfect clinical histories and faulty observations are criticised without restraint. The material has been surprisingly interesting and varied, far better, the reporter states, than any he saw in hospital, and upwards of a hundred autopsies have been performed in the six months during which the organisation has been properly developed.

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[1] Cicely Northcote Trust: Fifteenth Annual Report, October, 1923, to October, 1924.

[1] Home Post-graduate Work by Means of Post-mortem Examinations, Med. Jour. and Record, Feb. 18th, 1925.

There is no better way to study medicine than to keep good records of cases and, when the patients die, to examine the body. Why, then, is this not more often done? In this country, at any rate, local conditions may be largely to blame. Autopsies are not easy to carry out in general practice; Dr. Waite himself confesses that in American homes it is difficult to obtain leave for their performance. But in America embalming is usual, and undertakers' establishments have to be equipped with good operating theatres which are convenient places for making the post-mortem examinations. This, however, cannot be the whole story, for by no means all the patients dying in our hospitals, even the teaching institutions, come to the post-mortem room, and the fault does not lie entirely with the general public. It is true that in a certain proportion of cases permission to make an examination is refused, but when the doctor takes the patient's relations into his confidence and explains the situation, this proportion becomes surprisingly small. The general public, no doubt, needs educating in these matters, but the medical profession is perhaps not beyond reproach. We may at any rate congratulate Dr. Waite and his friends on their achievement, and the medical schools from which they graduated on the success with which they have imbued their graduates with the true scientific spirit. Mr. Lewis Sinclair, please note.

PATHOGENICITY OF THE BACILLUS ABORTUS IN MAN.

AT a recent meeting of the Royal Society of Medicine[1] Prof. J. H. Eyre introduced a discussion on the alleged identity of the *Bacillus abortus* of Bang and the *Micrococcus melitensis* described by Bruce. Their morphological, cultural, and serological identity is well known, the striking difference between one micro-organism and the other lying, according to some observers, in their pathogenic power with regard to man—namely, that *B. abortus* is devoid of such power. Nicolle, Burnet, and Conseil made numerous experiments in this direction and inoculated five subjects with cultures of *B. abortus*, three derived from cows and two from swine. None of these individuals presented any febrile or other disturbance. According to Nicolle, the absence of pathogenicity of *B. abortus* for man would exclude infection by this organism, but further confirmation is required on this point. In the actual state of our knowledge it may probably be concluded that we do not possess data of differentiation enabling us to distinguish *B. abortus* from the *Micrococcus melitensis*; hence [illegible] certainly whether a patient, from whose blood a micro-organism is isolated which responds to the tests for both germs, is affected by one of them rather than the other. We may refer to clinical observations of cases recently verified in the provinces of Bologna, Ferrara, and Modena, in which it has not been possible to trace in the history of the patients any contact with goats, and may consider, moreover, that these cases occurred coincidently with an epidemic of epizootic abortion and were not rare in veterinary surgeons and butchers who had been in contact with affected cows. It is of interest to draw attention to two cases published by Dr. R. Viviani.[2]

The first case was that of a butcher, aged 35, whose cows in one stall had all aborted. Fifteen days previous to being taken ill he had slaughtered a sick calf in this stall. His illness consisted of fever of remittent type accompanied by sweating and splenic enlargement. He had had no contact with goats; in fact, there were none in the neighbourhood. Malarial parasites were absent from his blood, the leucocytic formula of which was normal. Agglutination for typhoid and paratyphoid was negative, that for melitensis occurred in dilution of from 1–700 to 1–1000, that for *B. abortus* 1–1000. Cultures revealed a small coccus and a short bacillus Gram-negative. The serum agglutinated this germ at 1 per cent. Agglutination also occurred with 1–1200 antimelitensis serum and with 1–1000 serum of cows affected with abortion, which also agglutinated *B. abortus* at a dilution of 1–800.

The experiments of W. E. Cotton, published in the *American Veterinary Review*, December, 1923, would seem to show that a large number of abortions in pigs were related to an aberrant type of *B. abortus*, the specific agent of contagious abortion in cows, and in this connexion the second case reported by Dr. Viviani is interesting.

The patient, a previously healthy girl, had never drunk goats' milk nor come directly in contact with them. There had been no cases of epizootic abortion in her stalls, but she had looked after a sow which had aborted some months previously. Her febrile attack lasted about two months and was accompanied by enlargement of the liver and spleen. Malarial parasites were absent and sero-agglutination occurred with melitensis in dilutions of 1–1000 and also with *B. abortus*. Notwithstanding the absence of fever at the time of examination a Gram-negative organism was isolated morphologically similar to *Micrococcus melitensis* and agglutinated by 1–1200 antimelitensis serum and by 1–1000 serum of cows affected with epizootic abortion.

The importance of the question evidently calls for further experimental researches.

WOUND TREATMENT BY SUCTION.

AN article in the *Schweizerische Medizinische Wochenschrift* (Jan. 29th, 1925) by Chas. Reinert, of Bern, deals with the uses of suction in combination with irrigation in the after-treatment of suppurating wounds and cavities. The principle underlying the treatment consists in the continual slow irrigation of the wound with some suitable antiseptic or saline lotion, and the immediate removal of the discharges by slow continuous suction. The apparatus used consists of two independent parts arranged on the same stand, the one for irrigation and the other for suction; either may thus be used separately when the combination is not required. The suction part of the appliance bears some resemblance to the Cathcart pump for use after cystotomy, and consists of two large glass bottles connected by a drip-feed to regulate the flow from the upper to the lower. The suction tube is attached to the top of the upper vessel and is led to the wound via a smaller collecting bottle. By means of a by-pass valve the used water in the lower bottle can be pumped by hand into the upper vessel again and the suction thus made continuous. In addition, the author has modified Bier's suction glasses in such a manner that the wound is irrigated and the discharges withdrawn, while a negative pressure is kept up within the chamber the whole time. By attaching this apparatus to a small glass cup from which a tampon of gauze extends down into the depths of the wound he has also been able to combine suction with capillary attraction. The total energy available is very small, and, as can easily be appreciated, the negative pressures produced are low and equal only 2 or 3 inches of water. The author considers that the latter is an advantage as no possible damage to delicate granulation or other tissue can occur. At the same time it must be borne in mind that the discharges from wounds are oftentimes thick, fibrinous, and viscid, and, even although the irrigating fluid may thin them to some extent, a negative pressure of a few inches of water only will be insufficient to move them along the collecting tubes. Again, if there be the slightest air leakage around the sides of the wound no suction will be exerted upon the discharges and the apparatus will merely aspirate air. The author makes the suggestion that where more rapid suction is needed the wat be allowed to flow freely from one bottle to the other by short circuiting the drip-feed. This can only be used during the actual dressing of the wound, for the increased degree of suction must of necessity be of short duration. The use of low degrees of suction in the continuous drainage of wounds bears little relationship to the use of suction in actual operative work. Here the degree of suction must be considerable in order to remove thick discharges, and especially blood, from the field of operation. The total amount of energy available, too, must be large if the blood is to be removed rapidly enough to be of real assistance to the operator. These desiderata cannot be achieved by a pump such as the one described by Reinert, but may be met by especially designed pumps drawing their energy from the electric supply, such as the reciprocating and rotary pumps, from the water-supply, as in the Sprengel pump, or cylinders of compressed gas, as in Norman Lake's pump described in THE LANCET (1924, ii., 1166). Each of these will work satisfactorily, and the choice of pump ultimately depends chiefly upon portability, ease of operation, and expense. As would be expected, however, none of these operating pumps are suitable for the continuous drainage of wounds or cavities. A small pattern of Lake's pump has, we understand, been made to work for one hour off a 60-gallon cylinder maintaining a negative pressure of about 10 inches of water, but even so the expense and frequent changing of cylinders render it unsuitable for really continuous suction. For this purpose, therefore, the pump described by Reinert may be of value. While operative suction is a method which is being used more and more extensively by workers in every branch of operative surgery, the question of the real advantages to be derived from continuous irrigation-suction over other methods is one about which many will still be inclined to reserve judgment.

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[1] THE LANCET, March 21st, 1925, p. 606.

[2] Il Policlinico, Practical Section, Feb. 9th, 1925.

INTERSTITIAL KERATITIC NODULES IN TRACHOMA.

FROM the ancient capital, Zagreb, we have received a special number of the journal of the Medical Society of Croatia and Slavonia, celebrating the jubilee of its foundation in 1874, and claiming by implication for the new State of Jugoslavia its due place in the scientific and medical world of the West. The title alone of the journal (*Lijecnicki Vjesnik*) is unintelligible to those without the language, for the articles, of which there are 16, are in either German, English, or French. They include clinical studies of diabetes insipidus, a description of a case of thrombosis of the lateral sinus after peritonsillar abscess, notes on the intermediary zone in the spinal cord of mammals in relation to the visceral nervous system, and a discussion of the statistics of eclampsia. The restoration of the ala nasi is the subject of a sound note, and a case of mixed spring catarrh and trachoma with nodules in the parenchyma of the cornea demonstrable by the slit lamp is described. By direct light, on magnification about 35, these nodules were seen as greyish bodies "of poppy corn size," but they were seen better by reflected light as very fine black dots. They ultimately cleared up after treatment with copper, leaving the vision nearly normal. The author, Dr. V. Derkac, claims that this particular change has never been previously described in connexion with trachoma.

ANTITOXIN INTRAPERITONEALLY INJECTED.

Dr. John A. Toomey, Dr. Otto L. Goehle, and Dr. Carl C. Dauer, of the Division of Contagious Diseases, Cleveland City Hospital and the Department of Pediatrics, Western Reserve University, record their observations[1] on 168 cases of diphtheria treated by intraperitoneal injections of antitoxin with comparative observations on 100 other cases of diphtheria, 70 of which received antitoxin intravenously and 30 by the intramuscular route. The only previous series of diphtheria patients on record treated by intraperitoneal injection of antitoxin consist of 12 cases reported by Dr. E. S. Platou, of New York, to whose paper we drew attention at the time.[2] Like this observer, the present writers found the intraperitoneal method was a safe and simple one, and further simplified it by using commercial antitoxin without the addition of saline solution. The injection was received well in all cases. Only one patient with no history of protein sensitivity had a violent reaction which began five minutes after injection and lasted ten minutes. In five other patients menstruation started again, but no other undesirable effects were noticed. The clinical evidence pointed to rapid absorption of the antitoxin by the peritoneum. The membrane disappeared almost as quickly after intraperitoneal injection as when the intravenous method had been used, without the disagreeable reactions associated with intravenous injection. While not recommending intraperitoneal injection for all cases of diphtheria, the writers regard *it as the method of choice in cases of toxic myocarditis* where it is desirable to avoid the shock accompanying intravenous injection, and also advise its employment in infants and children with poorly developed veins who have had diphtheria for more than two days.

WELFARE WORK IN THE UKRAINE.

UNDER the heading the Care of Mother and Child in the Ukraine, with especial reference to the City of Kharkov, the *Brazil Medico* for Nov. 29th, 1924, publishes an article of considerable interest by Herr Friedel Haustein, of Berlin. The author states that on a tour of investigation through Russia, undertaken on behalf of the Section of Hygiene of the League of Nations, he was very favourably impressed by the excellence of the arrangements made for the welfare of mother and child, as also by the satisfactory physical condition of the children, both those in institutions and those outside. A detailed description is given of the system at work in the Ukraine with its antenatal clinics, infant welfare centres, creches, arrangements for the treatment of crippled children, those suffering from tuberculosis and venereal disease, and for the general hygienic supervision of school-children up to the age of 16. As the means at the disposal of the State are very limited, all superfluities are dispensed with and the greatest simplicity is observed in the institutions engaged on the work; at the same time, states the author, mean economies are avoided and the just requirements of hygiene are uniformly met. Special mention, says Dr. Haustein further, should be made of the altruistic devotion and enthusiasm for the work exhibited by all the medical men engaged in it. This continually impresses the observer and explains how it has been possible throughout the Ukraine to build up from nothing and with the scantiest means the equipment necessary for the carrying out on a grandiose scale of the present Government scheme for the protection of mother and child.

ADENOMYOMA OF THE STOMACH.

SMALL pieces of pancreatic tissue are not very uncommonly found in irregular places detached from the main gland altogether. They are usually situated in the wall of the stomach, duodenum, or jejunum, and may rarely form the starting points of carcinomata; generally they remain quite small and are of no evident practical importance. A group may, however, be differentiated which are larger, more complex in structure, and associated with symptoms which make it possible that the surgeon may come across them; their recognition, then, is desirable, since they are in no sense malignant and are satisfactorily treated by local removal without anything drastic in the way of gastrectomy. The current number of the *Journal of Pathology and Bacteriology* (vol. xxviii., p. 195) contains a well-illustrated account by Prof. M. J.

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[1] American Journal of Diseases of Children, February, 1925.

[2] THE LANCET, 1923, ii., 991.

Stewart and Dr. A. L. Taylor, of Leeds, of five cases which they have met with, one at post-mortem, the others at operations. Where clinical details were available, there was a history of intermittent dyspepsia over periods varying from two to 16 years; pain of the hunger type and nausea were present, but no vomiting or hæmatemesis. Removal of the nodule cured the symptoms. These adenomyomata occur as thickened plaques in the stomach wall in the neighbourhood of the pylorus, about half to one inch in diameter, covered with normal mucosa; section shows a localised hypertrophic thickening of the muscular coat with a whorled arrangement; one or more small cysts are also often present. Microscopically, undifferentiated epithelium occurs in acini or ducts which more or less resemble bile or pancreatic ducts, while fully differentiated Brunner-type glands on the one hand and pancreatic acini on the other are also found. Mingled with these epithelial elements, and often forming definite sheaths to the glandular masses, is overgrown smooth muscle which evidently forms an integral part of the abnormality. The condition has no relation to ulcer or carcinoma, and is one of those heterotopias which, as Dr. G. W. Nicholson has shown so well in recent volumes of the Guy's Hospital Reports, throw such interesting light on the problems of growth and differentiation.

TUBERCULIN TESTS IN CATTLE: THE INTRADERMAL TEST.

There is issued this week a report[1] of the Tuberculin Committee of the Medical Research Council dealing with tuberculin tests in cattle and having special reference to the intradermal test. The Tuberculin Committee was appointed five years ago to direct investigations into the use of tuberculin in the diagnosis and treatment of human tuberculosis, at which stage the medical members of the Committee shared the general opinion that tuberculin tests, and in particular the subcutaneous tests, were of proved utility for the diagnosis of tuberculosis in cattle, however limited their value might be in the human subject. Shortly afterwards representations were made to the Ministry of Health by Lord Astor, Lord Elveden, and Mr. Wilfred Buckley, showing that the tuberculin tests made in herds producing "certified milk" gave anomalous results, and, as many other stock owners have found the same, the Ministry of Health sought the assistance of the Medical Research Council, within whose province further investigations obviously lay. The problems which the Committee had before them on commencing these investigations were to account for discrepancies in reaction to the subcutaneous test, to ascertain the comparative values of the tests—whether subcutaneous, intradermal, or ophthalmic—and to suggest the most efficient varieties of tuberculin and improvements in the methods of standardisation.

The Committee, of which Captain S. R. Douglas is the chairman and Dr. Salusbury MacNalty is the secretary, came to the following conclusions, among others:—

(1) That the subcutaneous test is perfectly satisfactory for the presence of tuberculosis in cattle, when carried out under the laboratory conditions of a scientific trial, though it may be unsatisfactory in ordinary farm conditions.

(2) That the intradermal test is superior to subcutaneous tests, the ophthalmic test being regarded as subsidiary.

(3) Of the intradermal test it is stated that it is an accurate test for the presence of tuberculosis in cattle, the percentage of error being extremely small, while (4) its further advantages over the subcutaneous test are, no need for temperature observations, no need to rest the animal, or interfere with the ordinary routine treatment; three observations only are usually necessary; and a smaller quantity of tuberculin is needed.

(5) The variety of tuberculin employed is "Old Tuberculin," and it appears to be immaterial whether a bovine or human strain is used; but (6) it should be of proved high potency, being administered undiluted for both intradermal and ophthalmic tests.

Prof. G. Dreyer and Mr. R. L. Vollum, working for the Tuberculin Committee, published in The Lancet last November[2] a paper on the Precipitin Method for the Standardisation of Old Tuberculin, an abstract of which is given in the report. While the Committee conclude that extremely accurate standardisation may later be found unnecessary, they hold that no tuberculin should be employed in the examination of cattle that has not been tested by some method to show that it is of high potency.

THE OPHTHALMOLOGICAL SOCIETIES' CONVENTION.

The Ophthalmological Society of the United Kingdom, together with its affiliated societies, has decided to hold in London, from July 14th to 17th, a Convention of English-speaking ophthalmological societies and associations, all members of which are invited to attend, and the presidents of such bodies in the different parts of the British Empire and the United States of America have been asked to appoint official delegates. Mr. E. Treacher Collins will preside over the Convention, and an interesting programme has been arranged. Four mornings, two afternoons, and one evening will be devoted to the scientific work of the Convention. On Wednesday evening, July 15th, there will be a symposium on the subject of the Evolution of Binocular Vision by the following selected speakers: Sir Charles Sherrington, P.R.S., Sir Arthur Keith, F.R.S., Sir Frederick Mott, F.R.S., Prof. Elliot Smith, F.R.S., and Prof. S. E. Whitnall. The Bowman Lecture will be delivered by Sir John Parsons, F.R.S., on the afternoon of Thursday, July 16th. Microscopy of the Living Eye has been chosen as a subject for discussion. It will be opened by Dr. Gordon Byers, Montreal; Dr. Arthur J. Bedell, Albany, U.S.A.; Mr. Harrison Butler, and Mr. Basil Graves. Those wishing to take part in it, to read any paper, or exhibit any specimen at the Convention should send in their names to the secretary of the Scientific Business Committee, Mr. R. Foster Moore, 91, Harley-street, London, W. 1, not later than four weeks before the meeting. At a general meeting of the Convention the re-establishment of international ophthalmological congresses on the pre-war basis will be considered. There will be a museum of drawings, instruments, pathological and anatomical specimens, to which all members of the Convention are invited to send exhibits. The General Secretary of the Convention is Mr. O. B. Goulden, 79, Portland-place, London, W. 1, from whom further particulars may be obtained.

Royal Northern (Group of) Hospitals.—The annual report of this group, which includes the Royal Chest Hospital and the Hospital of Recovery at Southgate, together with the Convalescent Home at Clacton-on-Sea, shows that during 1924 32 closed beds were reopened, though 28 still remain closed. The number of in-patients treated was 4801 and out-patients 40,831, an increase in both departments on the previous year. The financial report is very satisfactory; donations amounted to £30,817, as compared with £24,975 in the previous year, and legacies to £7950, as against £2634 in 1923. The total income for maintenance purposes was £82,720, as compared with £73,951 in the previous year. The report states that the number of patients attending the light treatment department has so increased that it has been necessary to extend it, and that a new maternity department will be worked in conjunction with the Maternity Nursing Association, while arrangements are being made for the interchange of nurses and pupils for training in midwifery. In the venereal diseases department an additional session for women and children was arranged. During the year 848 new cases of venereal disease were treated, and the total number of attendances was 14,697.

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[1] Special Report Series, No. 94. H.M. Stationery Office. Pp. 196. 3s.

[2] The Lancet, 1924, ii., 1003.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CXVIII.—THE TREATMENT OF SYMPTOMLESS HÆMATURIA.

Under this term is included a group of cases characterised by the presence of hæmaturia as the only symptom or sign of which the patient complains—pain, frequency of micturition, pyuria, and other symptoms so frequently associated with bladder or kidney troubles being here conspicuously absent. Pain, however, may occur in symptomless hæmaturia if the bleeding be profuse enough for clots to form and to pass along the ureter or urethra, but such pain is merely an accident in the case, and is not dependent upon the actual cause of the hæmaturia. The hæmaturia is usually simply a chance discovery on the part of the patient, who happens to notice the altered colour of the urine.

Hæmaturia of this symptomless type may arise from a great diversity of pathological conditions—in fact almost any disease of the urinary tract may occasionally so first declare itself, though with most of such it is very exceptional. In 1922 I analysed 100 cases that had come under my own observation to ascertain the pathological conditions ultimately disclosed. The hæmaturia was of vesical origin in 65 (the commonest single cause being villous papilloma, 41 cases) and of renal origin in 35 (malignant growths, including hypernephroma, being the most frequent cause). In 86 cases the pathological cause was definitely ascertained, and of these 71—i.e., 82·5 per cent.—were due to neoplasm (44 benign and 27 malignant). Thus of all my cases of symptomless hæmaturia of known ætiology benign neoplasm accounted for 51·1 per cent. and malignant neoplasm for 31·3 per cent. This great preponderance of new growths will naturally lead the surgeon to think first, in any given case, of neoplasm, and especially of villous papilloma of the bladder; the fact, however, that in about one-third of all cases a malignant growth is present, possibly in an early and operable stage, should emphasise the extreme importance of tracing the hæmaturia to its source at the earliest opportunity. In my series, among the rarer causes of vesical origin were included prostatic enlargement, simple "solitary" ulcer, and calculus fixed in a post-prostatic pouch; of renal origin papilloma of the renal pelvis, angeioma of a renal papilla, renal calculus, congenital cystic disease, chronic nephritis, mobile kidney, and "essential" hæmaturia. This term is applied to renal hæmaturia, the ætiology of which cannot be determined even after the application of all the methods of urological investigation at present known. It is an astonishing, and at the same time a disconcerting fact that, as in two of my cases, a kidney may bleed so profusely as to necessitate nephrectomy to prevent immediate death from hæmorrhage, and yet subsequent examination by an expert pathologist may fail to discover any macroscopic or microscopic change in it.

Investigation of a Case.

The first step in the clinical investigation of a case of symptomless hæmaturia is to make sure, by microscopic detection of blood corpuscles, that it is really hæmaturia, and not the rare condition of hæmoglobinuria. Further, general diseases that cause hæmaturia such as scurvy-rickets, hæmophilia, the group of anæmias, and the passive congestion of heart disease, must be excluded. Next must be investigated, in order of urgency, (1) the source of the bleeding, whether vesical or renal, and if the latter whether unilateral or bilateral, (2) the nature of the lesion causing it, and (3) the functional state of the rest of the urinary tract. The physical characters of the blood—whether intimately mixed or not with the urine, whether bright red or darker in colour, and whether associated with clots of any characteristic shape—although serving as a rough-and-ready guide to the source of the hæmorrhage, are not sufficiently trustworthy in any given case. By cystoscopy alone can the source of the hæmorrhage be determined with certainty, and its application, particularly if bleeding is actually in occurrence, should be regarded as a matter of extreme urgency. If the hæmaturia be of renal origin, it is only at this time that it can be traced to the defaulting kidney; it may last but a few hours, and may not recur for many months, during which, in about one-third of all cases, a malignant growth will be steadily progressing, and its chance of successful removal becoming lost. It still happens much too often that the practitioner's first efforts are directed not to the ascertainment of the source of the bleeding but to its immediate arrest; he puts the patient to bed and administers morphine and internal styptics. Although this may allay the alarm which many patients feel, in the long run it will prove the greatest possible disservice: it is far better to let the hæmorrhage continue until arrangements can be made for a cystoscopic examination to trace it to its source.

The Need for Cystoscopy.

Cystoscopy is as urgently called for in this type of case as is early laparotomy in acute abdominal crises. Cystoscopy during bleeding will, if this be of renal origin, show from which ureteric orifice the blood is escaping; if the bleeding is of vesical origin and not too profuse completely to prevent vision, both the source of the hæmorrhage and the causative lesion will be seen. If it be very profuse, repeatedly washing out the bladder with hot boric lotion, combined with the introduction of a solution of adrenalin, will usually suffice, but if these measures fail to secure satisfactory vision, then this fact alone is strong presumptive evidence of a vesical origin, and is sufficient justification, should the hæmorrhage be alarming, for immediate suprapubic cystotomy. Cystoscopy, after cessation of the hæmorrhage, may fail to show its source. Should it have been of vesical origin some lesion in the bladder sufficient to account for the hæmorrhage will be noted; the absence of such lesion indicates a renal source, though it does not indicate which kidney is at fault. If one ureteric orifice has a definitely abnormal appearance, this suggests, though it does not prove, that the corresponding kidney is the offender; no proof is, in fact, possible, save actually seeing the bleeding in progress, and this should emphasise the importance of not permitting the bleeding stage to pass without a cystoscopic examination. Thus in one case cystoscopy, after hæmorrhage had ceased, showed a large villous papilloma of the bladder, which might well have been a sufficient cause; later cystoscopy, however, during bleeding, showed blood coming from the left ureteric orifice, and renal exploration disclosed a hypernephroma. In another case, one of right renal calculus shown by previous radiography, was admitted urgently into the Manchester Royal Infirmary with severe right renal colic and profuse hæmaturia. The latter was thought, not unnaturally, to be due to the calculus; routine cystoscopy, however, traced the blood to the left ureteric orifice, and later exploration of the left kidney again disclosed a hypernephroma. If the bladder be normal and no renal tumour or other physical sign be discovered, then there is nothing for it but to wait until the hæmaturia recurs and cystoscope during the attack.

Bleeding from the Kidney.

When the blood has been seen to escape from one ureteric orifice, a thorough investigation must be instituted by all the usual urological methods to ascertain, if possible, the pathological lesion in the corresponding kidney—careful palpation of the loin, a chemical, microscopic, and bacteriological examination of the urine, and possibly also of the separated urines after ureteral catheterisation, radiography, and pyelography. By these means positive evidence may be obtained of certain conditions—e.g., calculus, tumour, or tuberculosis—but if they yield negative evidence only an exploratory nephrotomy should always be performed. Only when this has been undertaken with negative result do I care to regard the hæmorrhage as "essential." American writers apply the label "essential" when urological investigation short of exploratory nephrotomy fails to show a cause, and advocate expectant treatment of "essential" hæmaturia—intrapelvic injection of silver-nitrate solution through the ureteral catheter, the administration of calcium salts by mouth or intravenously, the subcutaneous injection of horse-serum, &c. I would fear in these cases that an early malignant growth was possibly being overlooked. This would certainly have happened in the two earliest malignant renal growths I have operated upon, which were discovered only after operative exposure, and the patients are both well four and a half and two years respectively after nephrectomy.

Before undertaking operative exposure of the kidney it is necessary, inasmuch as it may disclose some pathological condition requiring nephrectomy, that the functional capacity of the opposite kidney be estimated. For this I rely most upon the indigo-carmine test, the dye being injected intravenously, when the appearance of a deep-blue efflux at the ureteric orifice within three to six minutes is a safe indication of good renal function. Where the opposite kidney is efficient the bleeding organ is exposed from the loin, the upper end of the ureter and the pelvis carefully examined by palpation from without, the renal pedicle temporarily compressed with a light clamp, and the renal parenchyma freely incised a little posterior to its coronal plane until the pelvis and calyces are widely opened. If no macroscopic lesion be found, a small slice of the parenchyma is removed for microscopical examination, and the kidney carefully sutured with deep and superficial catgut sutures. The case must now be classed as one of "essential" hæmaturia, and should the hæmorrhage recur it may be treated expectantly with the confidence that a malignant growth has not been missed; only should the hæmorrhage become so profuse as immediately to threaten life should further operative treatment—i.e., nephrectomy—be considered.

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The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Lt.-Comdrs. to be Surg. Comdrs.: H. B. Parker and J. L. Priston.

TERRITORIAL ARMY.

Capt. G. F. R. Smith to be Maj.

Capt. C. W. Healey (late Gen. List T.A.) to be Lt., and relinquishes the rank of Capt.

TERRITORIAL ARMY RESERVE OF OFFICERS.

Maj. P. R. Bolus, from Active List, to be Maj.

ROYAL AIR FORCE.

D. B. Smith is granted a short service commission as Flying Officer for three years on the Active List.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED APRIL 4TH, 1925.

Notifications.—The following cases of infectious disease were notified during the week, namely:—Small-pox, 152; scarlet fever, 1713; diphtheria, 804; enteric fever, 42; pneumonia, 1110; puerperal fever, 51; cerebro-spinal fever, 8; acute poliomyelitis, 7; encephalitis lethargica, 56; dysentery, 10; ophthalmia neonatorum, 111. There were no cases of cholera, plague, or typhus fever notified during the week. The number of small-pox cases showed an increase of 18 over the number for the preceding week.

Deaths.—In the aggregate of great towns, including London, there were 5 deaths from enteric fever, 125 from measles, 11 from scarlet fever, 117 from whooping-cough, 20 from diphtheria, and 212 from influenza, as compared with 281, 301, 283, and 301 in the four preceding weeks. In London itself the deaths from influenza numbered 38, from whooping-cough 32, and from diphtheria 7.

Special Articles.

THE GOLD TREATMENT OF TUBERCULOSIS.

PRELIMINARY REPORT BY THE MEDICAL RESEARCH COUNCIL.

I.

VARIOUS gold compounds have from time to time been used in the treatment of tuberculosis. Recently a soluble complex salt of gold and sodium—namely, sodium aurithiosulphate—which has long been known to chemists, and is now made available under the trade mark of "Sanocrysin," has been introduced to therapeutics as a treatment for tuberculosis by Prof. Möllgaard of Copenhagen, who has found that it has the advantage of dissociation into complex-ions so that toxicity due to free gold-ions is avoided. Such toxic effects as this compound produces in tuberculous but not in normal subjects are attributed to destruction of the bacilli and increased liberation of tubercle toxins; and Prof. Möllgaard has also prepared an antitoxic serum for use, when necessary, to counteract these ill-effects. The results of experiments on animals and of numerous trials on human patients in some Danish hospitals have been fully described in his book, autumn 1924, on the "Chemotherapy of Tuberculosis." Critical summaries of these results and of other work in Denmark have been published recently in *The Lancet* and in the *British Medical Journal*. Clinical trials are now proceeding also in Germany and in Canada.

Prof. Möllgaard very courteously gave to the Medical Research Council a full supply both of the gold salt and of the protective serum for clinical trial in England, but desired that the preparations should not be made available for general use in medicine until the results of these trials were completed. In December he and his chief clinical colleague, Dr. Secker, visited England and gave a personal communication on the subject to those who were asked to try the preparations; while Dr. Secker remained in London long enough to visit several hospitals, advise on the selection of cases, and give the observers invaluable help during the treatment of individual patients by instruction drawn from his own wide experience.

The preparations were issued by the Council, as on the similar occasion of the introduction of insulin to therapeutics, only to those who were not engaged in private practice—that is, to whole-time professors of medicine or to tuberculosis officers. The Ministry of Health were kept in close touch with the work through a liaison officer. On account of the general interest aroused by discussion of this method of treatment, the Council think it desirable to issue this preliminary report on the early results of cases so far treated in Great Britain, and to explain their further policy.

Work in England has been in progress for less than three months; it has not been on a large scale, but the value of the opinions formed has been enhanced by the arrangement which used several observers of small groups working at first independently of each other rather than one observer of a large group. It was evident, when the observers subsequently met in the first conference upon which this report is based, that there was so great a divergence of opinion upon the value of the drug that any single observer relying solely on his own experience might easily have been led to a summary opinion that would have been unduly emphatic in his judgment for or against the treatment. The report deals solely with clinical results, and does not consider the laboratory evidence for the effect of the gold salt on tubercle bacilli or infected tissues nor that for the protective action of the specific serum.

Each dose of sanocrysin was dissolved in 10 c.cm. of distilled water and injected intravenously. The usual amount was 0·5 g. for the first injection and then repeated injections of 1 g. each at intervals of about three days, unless a severe reaction on the part of the patient occurred and compelled delay until the reaction had subsided. The total amount used in any case was generally about 5 or 6 g., and the injections were rarely continued until the goal suggested by the Danish experiences was attained—namely, a final state in which the last injection produced no rise of temperature.

The specific serum, usually from horses immunised by diaplyte tubercle vaccine, though at first a weaker calf serum also received trial, was injected into the muscles in doses of 20 c.cm. Its action is supposed to be that of neutralising the flood of tuberculous toxins liberated by the action of the gold salt on the infected tissues, and thus of lessening the general severity of the reaction to the chemotherapeutic injection. In cases with heavy tuberculous infection the serum was used either before or together with the first gold injection as a preliminary measure. In mild cases it was not used until a reaction of some severity had occurred; and in many instances it was never used at all.

Effects of the Injection of Sanocrysin.

Vomiting was often noticed as an immediate effect within a few minutes of the injection. In one control patient, without evidence of tuberculous disease, there was nausea and prolonged anorexia after three injections but no temperature rise or any other reaction. There were no other control observations of cases with fever from known causes other than tuberculosis, so that the evidence is not sufficient to ascertain whether the gold salt can be used as a test to distinguish non-tuberculous from tuberculous febrile states. In a group of five cases of pulmonary tuberculosis, that were clinically mild but radiologically moderately extensive, there were slight pyrexia and trifling albuminuria, but no other features of reaction. The gold salt in amounts up to 5 or 6 g. therefore seemed to be non-toxic for patients with only slight tuberculous lesions.

Severe reactions were generally produced in cases of more extensive infection. The temperature rose within a few hours to 103° or 104° F.; but there was no case of hyperpyrexia nor of critical fall. Vomiting often recurred, but diarrhœa was not often observed. The patient felt ill, depressed, and lost appetite. A metallic taste was sometimes complained of, and there was a tendency to ulceration of the mouth and throat. The rise of temperature lasted three or four days, but was generally less with each successive dose. After the second or third dose rashes often appeared, like those of measles or scarlet fever, and not often itching. In one case an erythematous rash persisted for a fortnight and was accompanied by an outbreak of many indolent open sores. The rashes were seen in cases where no serum had been given. They were perhaps more frequent in cases of closed tuberculous infection.

Albuminuria was a common occurrence, and in some cases exceeded 1 per cent., though it did not last long. No œdema resulted and there was no evidence of persistent renal lesions. Measurements of blood-urea were not made in any of the cases of severe albuminuria. In one necropsy, where there had never been more than trifling albuminuria, 8 per cent. of the total metallic gold injected was found in the kidneys on death 28 days after the last injection of sanocrysin. Gold was proved to be excreted by the bowels and by the kidneys after an injection of sanocrysin. Jaundice of a grave nature, which in the Danish experience was a very rare event, occurred in another patient who died, and a relatively large amount of gold was found on analysis of the liver.

Features strongly suggesting that the gold salt had a direct action at the site of the tuberculous infection were often seen. Thus, in the lungs a focal reaction was evidenced by local pain, a sense of tightness, and by prolonged tachypnœa. This was in at least three instances aggravated by the development of a very critical state in which the pulse became rapid and feeble and the patient so collapsed, though the temperature did not fall seriously, that great anxiety was aroused as to the chances of recovery. Except for a local increase of crepitant râles, there were no clear changes in the physical signs in the lungs during these focal reactions. Cough, however, was generally increased and sputum was at first more abundant if the patient had strength for expectoration. Subsequently both cough and sputum tended to lessen.

Headache was never intense. A general state of depression and lack of vitality together with loss of weight tended to develop in cases of extensive infection after a course of treatment, and this retarded subsequent recovery in the hospital wards.

Effects of the Injection of the Protective Serum.

Clinical experience varied on this point. At some hospitals nearly every patient had severe serum sickness, perhaps with its own rash and vomiting, and certainly with severe joint and muscle pains. Other observers never saw such effects. The differences were not explained by reference to any particular batch of serum, or to different effect of calf or of horse serum respectively. There were, however, no examples of dangerous anaphylactic phenomena.

It was difficult to form a clear conclusion as to the benefit of the serum. Some observers thought they had proof of its power to control albuminuria and focal reactions in the lungs, if given early and before these features became serious; others were not convinced. In general, serum was freely used for severe cases of infection. A few trials were made of the influence of the serum on the general state of a tuberculous patient apart from the use of sanocrysin, but they led to no demonstrable results.

Summary of Clinical Results.

Clinical experience in Britain has confirmed th description in Prof. Mollgaard's book of the immediat effects of sanocrysin as seen in Danish hospitals. Th drug does appear clinically to have a specific actio on tissues infected by tubercle bacilli, and th severity of the constitutional reactions does appea to be directly related to the intensity of the tuberculous infection. Further, the drug seems to have bu slight toxicity for human patients who are no infected by tuberculosis, though in this respect ver few control observations have been made. On accoun of the severity of the reactions in the first tuberculou patients chosen for treatment, no observer at th beginning felt justified in deliberately making contro observations in other febrile infections. For th same reason no one cared to begin straight awa with the treatment on a large number of tuberculou cases, but each observer preferred to select three o four individual patients and proceed cautiously.

The total number of cases covered by this preliminary report is small, about 30, of whom 22 definitely had tuberculous infections of the lungs Two of the pulmonary cases died, death in one hopeless case being perhaps accelerated by the treatment, and occurring in the other unexpectedly as the result of toxic jaundice. The remaining 20 do not lend themselves to any numerical analysis Uncomplicated pulmonary tuberculosis is a disease of which few physicians can confidently foretell the progress, upward or downward, during any given period of two or three months, which was all the time available for these preliminary observations. But it was the opinion of those observers who had had most experience in dealing with consumption that the early cases of open tuberculous infection of the lungs did show some evident improvement, though there was no dramatic benefit, such as that seen with insulin or salvarsan in their corresponding diseases. On the other hand, cases with more advanced disease did not stand the treatment well, and the condition of some of these has been made worse. The latter experience accords with that of Dr. Secker of Copenhagen. Serious cases of long standing cannot endure the treatment in its present form.

There were two cases, not included in the preceding 20, in which most *striking improvement followed* at once upon the use of the drug, both the patients having lain three months in hospital previously without making any advance. One appeared to be a case of closed tuberculosis of the lung, spreading out from hilum glands, though it could not be proved that the pulmonary inflammation was caused by tubercle bacilli and not by some other smouldering *infection. The other was a case of tuberculous* peritonitis with an encysted collection of fluid that vanished at once upon treatment. In each instance the patient showed the rash and rise of temperature that in other proved cases of tuberculosis have followed the injection of sanocrysin. No case of pleural effusion was treated in this preliminary group because the results in this condition would not have offered any decisive evidence. Lupus of the skin, spinal caries, renal tuberculosis, and tuberculous glands are now being treated; but their progress is not sufficiently advanced to be included in this report.

The evidence, therefore, despite the relatively poor results in open pulmonary tuberculosis, and that is unhappily the *commonest form of tuberculosis*, is sufficiently encouraging to demand further clinical study. This is particularly so in view of the one experience common to all observers—namely, that the drug seems to exert a specific action on tuberculous tissues. The Medical Research Council expect that many months will pass after the issue of this preliminary report before any further definite conclusions can be drawn. Trial on a larger scale is now justified, and it is hoped to widen the field of work with the help of more observers. But the Council are of opinion that such further trial and extended observations are imperatively required before it can be clearly stated that this gold salt is of value in the treatment of tuberculosis and before it should be made available for general use in medical practice in Great Britain.

II. CLINICAL OBSERVATIONS.

The following section briefly resumes the clinical observations at the several places where the treatment was used. In every patient radiograms of the chest were taken before, during, and after treatment.

St. Bartholomew's Hospital (Prof. F. R. Fraser).—One case, 30 years old, general pulmonary tuberculosis; T.B. found once. Total gold salt used, 5·25 g. Severe reaction at first, but final injection of 1 g. caused no rise of temperature. No definite change.

London Hospital (Prof. A. W. M. Ellis).—Five cases of pulmonary tuberculosis, one case of tuberculous meningitis, and *one non-tuberculous control*. The general impression of the results was definitely unfavourable.

CASE 1.—Aged 17. Four years' history extensive pulmonary tuberculosis both lungs. General condition good; had gained 1 st. in weight. Tubercle bacilli found once during treatment. Total gold salt used 6·5 g. *in eight weeks.* Severe reactions, fever, rash, ophthalmic reactions, albuminuria, loss of weight. Gradual recovery on stopping treatment to *conditions very much as* on admission. No change in physical signs. Result: No change.

CASE 2.—Aged 53. Three months' history of pleural effusion and fibrosis. General condition fair. Tubercle bacilli present *on one occasion* only. Total gold salt used 2·75 g. Gold salt discontinued because of prostration, albuminuria, prolonged nausea, and anorexia. Severe serum sickness. Lost weight and has not regained it two months after cessation of treatment. Result: *No improvement*, apparently made worse by treatment.

CASE 3.—Aged 23. Two years' history. Extensive pulmonary tuberculosis both lungs. General condition good; had recently gained 1 st. *in weight.* Tubercle bacilli disappeared from the sputum during treatment but reappeared later in large numbers. Total gold salt used 1·5 g. Gold salt discontinued because of vomiting and continuous hiccough. Prolonged anorexia. Fever, rash, and albuminuria. *Three weeks after last injection onset of hectic temperature* with physical signs indicating rapid and extensive spread in the area of pulmonary involvement. No subsequent improvement. Is going steadily downhill. Result: Treatment led *to extensive spread of the disease and marked general* deterioration.

CASE 4.—Aged 30. Three years' history. Extensive chronic tuberculosis both lungs. General condition excellent, afebrile: albuminuria. Renal function normal. Tubercle bacilli absent. Total gold salt used 5·5 g. Moderately *severe febrile reactions, nausea, and vomiting. Ten days* after the last injection temperature became hectic and has remained so with marked increase in physical signs and evidence of rapid spread of the infection. At the same *time there appeared a very severe exfoliative dermatitis* apparently identical with that seen in severe arsenical poisoning. Result: Extensive spread of the disease. Severe exfoliative dermatitis.

CASE 5.—Aged 19. Three years' history. Extensive chronic *pulmonary tuberculosis of left lung, early involvement of* right. General condition excellent, afebrile. Tubercle bacilli disappeared during early part of treatment but reappeared later in increasing numbers. Total gold salt used 7·5 g. *Treatment followed by severe and prolonged* reactions with fever, rash, albuminuria, and breathlessness. Severe serum sickness. After the third injection the temperature never again reached normal, the physical signs in the chest increased *both in quantity and in extent*, and tubercle bacilli reappeared in the sputum. Subsequent injections failed to influence the course of the disease. Serum, when given, resulted in violent reactions with rigors and collapse. The resulting situation was a very difficult one. It was *obvious that the patient was going steadily downhill.* It was decided to try and increase the concentration of the drug even though, on account of the reactions, serum could not be given. Two injections of 1·0 g. were therefore given *with one day intervening. Four hours after the second* injection there were dyspnœa, cyanosis, and blood-stained frothy sputum. Death occurred in two hours. There was no post-mortem examination. Result: Death.

CASE 6.—Aged 9 months. Tuberculous meningitis. Total gold salt used 0·4 g. *in two days. No evidence of any* effect was seen. Death occurred on third day. Result: No influence detected.

CASE 7. *Control.*—In addition a case of lymphadenoma or *Hodgkin's disease was treated as a control.* The patient received three injections of the gold salt *and no serum.* There was no rise of temperature, no albuminuria, and no rash, but nausea and prolonged anorexia resulted.

St. Mary's Hospital (Prof. F. Langmead).—Three cases of pulmonary tuberculosis. The early results were *unfavourable and* one patient died, apparently in consequence of the treatment.

CASE 8.—Aged 18. General condition good, but T.B. abundant. Total gold salt 1·5 g. in four days and over 200 c.cm. serum. Vomiting, diarrhœa, rash, fever, albuminuria, and definite serum reaction. Focal reaction in lungs. On tenth day after the last injection *of* gold salt jaundice appeared and rapidly deepened. The patient died with hæmorrhage from the bowels 29 days after the last injection. Necropsy found spreading tuberculosis in the lungs and recent tuberculous ulceration of the bowels. *There* was only one hypertrophied kidney and that showed tubular nephritis. The kidney was not analysed for gold, but in the *liver* was found 0·028 g. of gold—i.e., 4·75 per cent. of the total metal injected.

CASE 9.—Aged 32. Early disease of right apex, afebrile. T.B. present. Total gold salt 5 g. Fever, rash, loss of weight, albuminuria; general condition deteriorated, but *is now improving* and *temperature is again* normal. Physical signs unchanged and T.B. still present in sputum.

CASE 10.—Aged 29. Peribronchial fibrosis and doubtful physical signs, but T.B. present; temperature normal. Total gold salt 6 g. Fever, severe serum sickness, loss of weight, slight albuminuria, *pain in chest, and* increased expectoration. General condition at first worse but later improving. No T.B. in sputum in last three weekly *examinations*, but patient developed pleurisy seven weeks after treatment was ended.

St. Thomas's Hospital (Prof. H. MacLean).—Only early or slight pulmonary tuberculosis was treated, in five cases of which four had T.B. present. They were in fairly good general health, with few symptoms and generally very little pyrexia. Gold salt was given in *doses of* 1 g. at four to seven days' interval up to a total of 4 or 5 g. No serum was used. The reactions were slight, a little pyrexia, some albuminuria, and increase of cough. No focal pain in the chest, no anorexia. All the five cases have subsequently improved, but it is difficult to decide whether this improvement is more than would have been effected by ordinary hospital treatment. This group is, however, of great importance as a control to show that the gold salt exerts little obvious effect on the general health of patients with only mild tuberculous infections.

CASE 11.—Aged 27. Three months' history. No T.B. 1·5 g. given. No reactions except slight albuminuria persisting since fourth dose. General condition improved. X ray: Disappearance of triangular opacity in right axilla which had suggested tuberculous infiltration.

CASE 12.—Aged 21. Six months' history. T.B. present. X ray: Disease upper third both lungs. Very dense R. apex, moderately dense L. Some fibrotic contraction R. apex. Had begun to improve already with hospital treatment. 1·25 g. given. Slight temperature reactions. Transient albuminuria for five days after fourth dose. Result: Previous rate of improvement maintained or accelerated. Final radiogram shows no change except increased contraction R. apex, though radiogram taken during reaction showed increase of shadows. T.B. present on discharge but some evidence of fragmentation

CASE 13.—Aged 28. Three months' history T.B. present. X ray changes of medium density both lungs, occupying one-third of pulmonary fields. 5·25 g. given. No definite reactions. Irregular pyrexia persisted. Attack of pleurisy after four weeks. Result: General condition improved. X ray: No change.

CASE 14.—Aged 18. Short history. T.B. present. X ray: Medium opacity upper half both lungs. General condition good. 5·25 g. given. No marked reactions. Result: General condition improved. Sputum: No T.B. on March 9th, 1925. No sputum since.

CASE 15.—Aged 24. Eighteen months' history. T.B. present. X ray: Very slight changes L. apex. General condition not very good. Two doses, each followed by slight pyrexia. Rash resembling erythema multiforme two days after second injection. Increased slowly during next six days. Began to fade on fifteenth day. Treatment in consequence delayed, and is now being completed.

University College Hospital (Prof. T. R. Elliott).—Four cases, of which two appeared to be cured by the treatment though the evidence was not conclusive. In two pulmonary cases with T.B. in the sputum the results were, on the other hand, definitely unfavourable.

CASE 16.—Aged 18, bi-lateral apical infection with one year's history. Poor condition though afebrile and T.B. always in sputum. Total gold salt, 6·25 g. in 34 days, with 360 c.cm. serum. Much albuminuria, no rash, no severe serum sickness. Marked focal reaction in lungs, with pain, dyspnœa, and twice a serious circulatory collapse. Prolonged vomiting and anorexia. General condition worse and T.B. in sputum more abundant.

CASE 17.—Aged 29, a hopelessly rapid caseous tuberculosis, chiefly of right lung, with less than six months' history. T.B. in sputum. Patient so ill that he seemed unlikely to survive more than a couple of months. Total gold salt, 4 g. in 11 days, with 300 c.cm. serum. Slight albuminuria and no rash. Marked focal reaction in lungs with dyspnœa that persisted. Died four weeks after last gold injection with repeated pulmonary oozings of blood. Necropsy confirmed the radiograms in showing that the caseous changes had spread rapidly into the left lung since treatment began, and the detachment of one large mass of caseous lung tissue loose within a cavity on the right side suggested that some unusually active process of destruction had been taking place. There was no tuberculosis outside of the lungs. Analysis found that of the total metallic gold given (40 per cent. of 4 g. salt—i.e., 1·60 g.), 0·128 g., or 8 per cent., was still present in the kidneys. The percentage of gold to the weight of the kidney was 0·037 per cent. The liver retained a total of 0·012 g.—i.e., barely one-seventieth of the percentage found in the kidney. The lungs contained only traces that could not be measured. This rapid disappearance of the gold from the tissues where its effect was desired suggests that the salt should not be given intensively in severe cases, as advised by the Danish physicians, but at longer-spaced intervals.

CASE 18.—Aged 20, tuberculous peritonitis with large encysted collection of fluid in the lower abdomen. Pleurisy at 14, with present X ray evidence of fibrosis on right side. No T.B. in sputum and abdomen not explored. Condition stationary during three months' rest in hospital previous to treatment. Total gold salt, 1·5 g. in 17 days and 80 c.cm. serum. Febrile reaction, with rash and some pain in right chest and in abdomen. The tumour had vanished by the time that the last dose was given. No recurrence a month later, but still some chronic inflammation found on rectal palpation of the uterine adnexa. Patient gaining weight. Apparently a most definite improvement as the immediate result of treatment.

CASE 19.—Aged 14, query localised tuberculous bronchopneumonia. Admitted for large quiescent tuberculous glands in neck, which were excised and microscoped. After anæsthetic for this operation patient developed consolidation of left lower lobe, which took four weeks to clear up. X rays subsequently showed much enlargement of hilum glands and a shadow spreading outwards in the middle of the right lower lobe. The patient was under medical treatment in hospital for three months, during which time there were no T.B. in sputum but there was continuous pyrexia and varying loss of weight. Boy seemed seriously ill when gold treatment was begun. Weight 5 st. 7 lb. Total gold, 1·25 g. in six days. Severe and prolonged rash, rise of temperature, and fall of weight to 5 st. 2 lb. No focal reaction in glands of neck. Then recovery, with temperature thenceforward normal and rise of weight by 2 or 3 lb. weekly to 6 st. 5 lb. on discharge from hospital. Still faint X ray evidence of fibrosis in area of earlier opaqueness in right lung. The boy was cured with unusual rapidity of his lung inflammation, which was not actually proved to be tuberculous, though its appearance was clinically identical with that of hilum tuberculosis.

Cardiff (Prof. S. L. Cummins).—Three cases of early pulmonary tuberculosis of which two showed definite improvement and one, whose preliminary course of treatment has only just been completed, feels better although he has not yet started to regain weight.

CASE 20.—Aged 21. Early disease involving two lobes, but only slight in density. Fair general condition. T.B. present. Total gold salt, 1·5 g. in five weeks, 92 c.cm. horse serum. Moderate reactions after first four doses. Sputum ceased. T.B. vanished. Lost 2½ lb. during treatment. Has now regained this and added about 4 lb. to original weight.

CASE 21.—Aged 28. Definite pulmonary disease right apex, with cavitation. T.B. present in great abundance. Total gold salt, 6·5 g. in seven weeks. 95 c.cm. horse serum. Moderate reactions and transient albuminuria after gold salt. Severe reactions after serum. Sputum diminished and T.B. greatly reduced in number. Has lost 9 lb. during treatment. Is now feeling "as he used to before illness," but has not yet started to regain weight.

CASE 22.—Aged 15. Dullness and bronchial breathing upper third right lung. T.B. present in fair numbers. Good general condition. Total gold salt, 3·25 g. in five weeks. 30 c.cm. serum. Reaction and slight albuminuria after first dose. Intense serum sickness. Lost 3 lb. at first. Has now put on 1 lb. Is still under treatment. Appears much improved so far. No T.B. in sputum on last three examinations.

Edinburgh (Prof. Sir Robert Philip and Prof. D. Murray Lyon).—Work at Edinburgh was not commenced until January, and while a much larger series of cases was tried than at any individual centre in London few of these have yet reached the end of treatment. In general the results seem favourable. Serum was sparingly used, and in many cases not at all. In some tuberculous cases the Danish anti-tuberculin serum was used alone without the gold salt, and it was not seen to have any constant influence on the temperature curve. All the patients selected were without exception afebrile at the beginning of the treatment. In the pulmonary cases tubercle bacilli were present at the commencement. The first dose of ½ g. sanocrysin produced either very little reaction or a rise of about 2° F., the whole disturbance as a rule passing off in 24 to 18 hours. In two cases the temperature reaction to the first dose was prolonged for about ten days, a swinging temperature increasing for the first three or four days, reaching to about 103° F. and then gradually disappearing. No albuminuria or rash followed the first dose. The second dose of sanocrysin was usually followed by much larger temperature disturbance lasting a little longer than that of the half dose, but in most cases each subsequent dose gave rise to a smaller temperature response, until in some cases no rise occurred at all.

A large number of the cases complained of loss of appetite and in some the anorexia was very severe; vomiting has been frequent—in some cases within a few minutes after each dose, in other cases a few hours later; or again, occurring only in the early morning each day. A considerable quantity of albuminuria might appear after the second or third dose and remain present for several days, gradually decreasing in quantity, even without the use of serum. Renal cells and casts were present in some of the cases, but there have been no other signs of renal irritation or nephritis. A case of tuberculous kidney showed no increase in albuminuria under treatment, but after four doses treatment had to be suspended because of recurring vomiting. Skin rashes have appeared in about three-quarters of the cases, irrespective of whether they have had serum or not. The rashes have varied considerably in character, from fleeting erythemas and urticarias to persistent dermatitis. In some cases the whole rash disappeared in a few hours, and in many it lasted for three or four days. The rashes were judged by an observer who had clinical familiarity with those caused by extensive tuberculin treatment to be very similar to the latter. In one pulmonary case a severe reaction has persisted for about three weeks, the whole skin being inflamed, the tissues about the face swollen, and there has been a universal desquamation. Apparently this subject had had some previous skin trouble.

In three pulmonary cases with abundant T.B. and definite X ray changes there was some improvement. Sputum was lessened, but a severe rash occurred in two, and in one of these there was persistent vomiting and anorexia. In eight other cases, including lupus of the face, renal tuberculosis, and scrofulous glands of the neck, no alarming features of reaction have yet been observed.

THE HEALTH OF THE ARMY IN 1922.

The report on the health of the army for 1922[1] opens with a letter from the Director-General, Sir W. Leishman, to the Under Secretary of State for War, announcing improvement "in almost every direction" in the health of the army, which has, he adds, continued into 1923. The report for 1923 is already in preparation, for it is hoped that these reports will soon be issued within 12 or 14 months of the close of the period concerned. This is obviously a desirable change, since the sooner the reports appear after the events they summarise, the more useful they are to the officers of the army and the other services. This report is arranged in the same sections as last year.

General Considerations.

The physique of the army generally has improved, though standards are still lower than before the war. The average strength of officers in the regular army was 12,058, of whom 120 per 1000 were treated as out-patients, 208·3 were admitted to hospital (374·2 in 1921), and 4·48, against 5·9 in 1921, died. The chief causes of illness were diseases of the digestive system, other than of the tonsils or of the liver, 44·8 per 1000, and local injuries 44·1 per 1000. No "wounds in action" are mentioned, though three officers died in Ireland from gunshot wounds, classed as local injuries, and no suicide, though one is noted on p. 44. The number of officer invalids is not stated.

The average strength of warrant officers, non-commissioned officers, and men was 208,079. The ratio per 1000 of hospital admissions was 515·8 (650),[2] with deaths stated as 3·22, but really 3·38, when suicides are included (4·20; 4·32 in 1921), and invalids finally discharged were 19·31 (27·48); 31·54 (41·20) were constantly sick. Each rate is thus about 20 per cent. lower in 1922. The diseases causing the most numerous admissions to hospital were malaria 65·0 (90·8), "diseases of the digestive system other than those of the liver or inflammations of tonsils" 47·4 (58·6), gonorrhœa 10·8 (45·9), and local injuries, with 12 deaths in Ireland due to gunshot wounds, 45·0 (53·2). Influenza 29·6 (20·9) has slightly increased, sand-fly fever 18·8 (31·0) is much lower, and enteric fever 1·2 (1·5) is less. The most frequent causes of death were local injuries, 0·56 (0·78), pneumonia, 0·44 (0·52), general injuries, 0·29 (0·50), and "other diseases of the digestive system," 0·27 (as in 1921). Malarial deaths have dropped to 0·16 (0·27), tuberculosis, pulmonary, remains 0·18. The case-mortality of enteric fever was 11·6 per cent. (8·33), of pneumonia 10·57 per cent. (11·7), and of small-pox 27 per cent. (22); of the three reported cases of meningococcus infection two died. Troops on board ship numbered 4157, with admissions to hospital 301·0 (411·6); there were no deaths from pneumonia (0·44 in 1921).

The wives of other ranks, 16,811, were admitted to hospital, 47·9 (50·3) for disorders of the generative system, and "other diseases of the digestive system" came next, 23·7 (33·3). Their death-rate was 3·15 (3·74). They got enteric fever as often as the men, and died equally, but their admission for pneumonia and bronchitis were a quarter of the men's, and their death-rates a half. There were 26,080 children, with a death-rate of 9·59 (12·07), due chiefly to disorders of digestion, 2·05 (1·25). Mention is made of 2400 cases of parturition without any details; a statement of the results among this group would be interesting to the civil profession.

The medical specialist at Netley reports that disordered action of the heart (tachycardia) has no satisfactory treatment. He considers the strain of the service does not cause it, "as the young soldier leads a much more healthy life than he did before enlistment." But, we would point out, he also leads a much more strenuous life; and a report on the incidence of such cases in the large depôts might be useful (p. 33), particularly if one depôt were distinctly better fed than another; the provision of more rest and different food might have a bearing on the subject. A new diet, "scientifically balanced," was introduced abroad on Jan. 1st, 1922, but is not detailed in this report. The food of the boys of the army, at Woolwich, Chatham, and the Duke of York's School, was under consideration this year, and their diets were readjusted and improved. Venereal diseases are less frequent, especially at home. This is ascribed to better accommodation in barracks, also to the spread of temperance, to provision of preventive outfits (improved this year), and to better facilities for disinfection. Incidence in the army was 70·7 (74·0), but among the large commands, heaviest on the Rhine, 251·2. Cases of venereal disease are now treated in ordinary military hospitals, in special wards.

Medical Examination of Recruits.

The statistics are for the recruiting year, Oct. 1st, 1921, to Sept. 30th, 1922, in which 45,932 recruits were taken into the army; 10,934 born in England, 5704 in Scotland, 2013 in Ireland, and 308 elsewhere; 31,566 were rejected, either at once or within six months. The rejections, 407·31, were more numerous than in the previous year (382·81), the chief causes being sub-standard chest measurements, defective vision, ear disease, defective teeth, valvular and other diseases of the heart, flat-foot and other defects of the lower extremity. The rejections were, in this year, fewer for tubercle, defective intelligence, and diseases of the heart. The standards of chest, weight, and height which were accepted are not stated.

Hygiene.

Under this heading it is shown that, among the larger commands, venereal disease, digestive disease, and scabies were at a maximum on the Rhine, malaria in India, local injuries, diseases of the areolar tissue and tonsillitis in Egypt and Palestine, influenza in the United Kingdom, and sand-fly fever in Iraq. Malaria is being energetically and successfully controlled. The percentage of admissions to hospital was 65·0 (99·8), of deaths 0·16 (0·27), and of invalids finally discharged 0·17 (0·18). In West Africa 142 cases arose among 241 men; apparently at first no anophelines were found in barracks, but later it is said they were found in some, and that 7 per cent. were found to be infected. Palestine had less malaria; General Headquarters remained non-malarial, and there were no primary cases of malaria among the troops in Jerusalem. In Cyprus care was taken not to bring the troops into dangerous areas at bad seasons, but a refugee camp of heavily infected Russians spread malaria to troops near by. Gibraltar suffers through mosquitoes coming from Spain.

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[1] Vol. lviii., pp. iv. + 100. H.M. Stationery Office. 3s.

[2] The figures in parentheses represent corresponding number for 1921.

The incidence of diseases of the digestive system was 47·1 (58·6) for men and for officers 44·8 (56·6). The improvement is ascribed to improved rations, better cooking and serving of meals, and oral hygiene. We may note that men suffer twice as much as officers from tonsillitis.

Influenza occurred chiefly at home. An outbreak at Redford, near Edinburgh, is believed to have been aborted by obligatory gargling and insufflation with 1/5000 potassium permanganate in normal saline, the affected barracks being put out of bounds to other troops, and double cubic space given to the men. Elsewhere early isolation, disinfection of drinking cups, and inoculation were also thought useful.

In West Africa an orderly with first-aid equipment attends at all football matches to minimise loss of service to the Crown from local injuries. Mother and child welfare schemes (entirely voluntary) are proving most valuable.

The Hygiene Department of the Royal Army Medical College passed 60 senior officers through courses and 9 for the specialist certificate, as well as 37 laboratory attendants. The museum is being rearranged and improved. Many investigations were made and some reports thereon published in the *Journal of the Royal Army Medical Corps*. The Army School of Hygiene at Aldershot absorbed the school from Blackpool and the Entomological Laboratory from Sandwich. It trained 5 officers and 48 other ranks, R.A.M.C. Two men were specially trained for the sanitary inspectors' certificate. Researches were conducted on water sterilisation, and on the life-history of *A. maculipennis*. The Army Hygiene Advisory Committee dealt with the energy expenditure of the soldier in training, the soldier's load,[3] and the application of motion study to digging, and visited barracks to decide important questions of sanitation. A War Office committee investigated problems of disinfestation, disinfection, and personal cleanliness on active service.

Pathology.

The staff of this section was rearranged. Pathology and hygiene were administered in small commands by the same officer; also the directorate of pathology took over the administration of venereal disease with its associated laboratory work, and all medical problems relating to chemical warfare. At the Royal Army Medical College 60 officers were trained in general and tropical pathology, 6 as specialists, and 36 men as laboratory attendants. Progress was made in the quest of a vaccine to prevent bacillary dysentery, and other vaccines, sera, and biological reagents were prepared and supplied to the Service, saving £16,000 to the public, which was also saved expense by the inoculation, at the College, of various Colonial and Indian officials. Various notes appear here on the work proceeding at present; the Sigma reaction is being found reliable; the type of pneumococci infecting a case is now quickly recognised, in the cerebro-spinal fluid, by the precipitin test; a new antiseptic ointment for the prevention of venereal disease has been devised and issued. The increase in venereal disease in the Rhine Army received much consideration. In Malta 14 cases of Mediterranean fever were recognised, 13 in native Maltese, who are not under the same sanitary control as the British troops. In Turkey fresh cases of dysentery were always bacillary and mostly of Flexner type; Shiga infections were infrequent but extremely severe; gonorrhœa cases got benefit from autogenous, but not from stock vaccines; nine cases of enteric fever were seen; blood cultures were obtained in nearly every case from the mercantile marine, but were little successful if patients had been protectively inoculated; a small outbreak of diphtheria in a British man-of-war was controlled by the laboratory; two cases of anthrax were cured with anti-anthrax serum. The R.A.F. seem to have taken over the pathological work of Iraq, except antirabic treatment, handed over to the civil authorities. We regret to notice that the laboratory at Khartoum had to be closed. Of 462 primary malaria cases examined there, 292 were benign tertian, 157 malignant tertian, and 13 quartan.

Dental Treatment.

New dental history cards have facilitated treatment by saving time spent formerly in repeated inspections. In 1922 the army had in it 208,079 men, of whom 158,793 were inspected by dental officers; 71·23 per cent. were selected for treatment, of whom 55·68 per cent., one-third of the inspected, had treatment completed during the year. The proportion of teeth saved goes on rising. Further, not half as many artificial dentures were required in 1922 as in 1921. In addition scaling and treatment for inflammatory conditions of the mouth were also done. Reports from abroad show that men sent from home require less dental treatment than in former years. India is absent from the dental returns and remarks both in 1921 and 1922, yet we observe that India has rates just below the average for diseases of the mouth and teeth and for diseases of the digestive system. Dental treatment was completed in 1922 for 1181 wives and children of soldiers.

Command Reports.

We have noticed in the reports from the larger commands that influenza was most prevalent at home, 46·2, especially at Aldershot, 65·3, but Aldershot had the fewest cases of tubercle, pneumonia, and bronchitis; Ireland had, as last year, a low rate. The Northern Command, 7755 men, had the highest rates and the Rhine was hardly higher. The death-rate on the Rhine was 6·29, the highest in any large area, while its venereal rate, 251·2, was enormous (army generally, 70·7), yet the proportion of bachelors in that army was a minimum. This Rhine area evidently requires careful watching. Its rates for diseases of the teeth and for diseases of the digestive system are a maximum, and the women here, and the children, have death- and sickness-rates higher than those observed in the United Kingdom.

	Admission to hospital per 1000.		Death-rates per 1000.	
	U.K.	Rhine.	U.K.	Rhine.
W.O.'s, N.C.O.'s, and men	376·1	689·7	1·86	6·29
Women	75·3	106·3	2·39	3·57
Children	61·1	111·1	1·02	6·95

The report contains notes on the management of nocturnal incontinence in soldiers on p. 38, on mental cases on p. 50, and on the prevention of malaria on p. 60, to which we direct attention. The death-rate in India, 7·09 in 1921, has been reduced to 4·81, but as compared with that, 3·26, in 1913 is still too high.

There is still work to be done in the building up of a healthy army. This end has, however, been brought nearer by the campaign of the R.A.M.C. against disease, well planned in 1921, and beginning to bear good fruit in 1922, with a 20 per cent. reduction of the admissions to hospital and of the death-rate.

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[3] See The Lancet, Feb. 11th, 1922.

PROCEEDINGS OF THE ROYAL COMMISSION ON NATIONAL HEALTH INSURANCE.*

(Continued from p. 786.)

EVIDENCE OF MINERS' SOCIETIES (*continued*).

Mr. E. Hibbert and Mr. D. Shaw gave evidence for the Lancashire and Cheshire Miners' Permanent Approved Society. (Q. 6969.) With regard to the suggestion made previously that segregation of membership under occupations was producing unfortunate results, the witnesses pointed out that there are normally about 1,100,000 persons engaged in the mining industry on the surface and underground; but in the miners' societies there are only 170,000 insured persons.

(Q. 6970.) Even with this so-called segregation we should do very much better if we had dental treatment. I am sorry to trouble you so much with dental treatment, but everything seems to turn on that.

Need of Dental Benefit: Evidence of Excessive Sickness for Lack of It.

(App. XI., 21.) This society urge that this should be a statutory normal benefit and that members should pay no part—or at any rate only a very small part—of the cost of any dental services necessary. They consider that this would transform their present unfavourable sickness experience. They had asked the regional medical officers to refer in their reports to the condition of the teeth of sick members referred to them for examination.

> The regional medical officers have very kindly complied with this request. It is quite obvious from those reports—and they confirm our previous impressions formed as laymen of the position of this subject—that a considerable proportion of our excessive sickness experience is due to this preventable cause.

(Q. 6981.) The witnesses suggested that miners are more in need of dental treatment than any other class.

Supply of Appliances.

(App. XI., 22.) In addition to dental treatment, the witnesses considered that the supply of certain appliances—trusses, spectacles, knee-caps—should not be dependent on favourable valuation results, but should be supplied generally, subject to a condition that their provision should enable insured persons to resume work.

Higher Rates of Sickness Benefit.

(App. XI., 10.) This society would like to have the normal rates of sickness and disablement benefits increased for married men with a rising scale for those with children under 14.

(Q. 7016–51.) With regard to sickness experience generally, the witnesses contended that by paying out sickness benefit from the date of the doctor's certificate and not from the date of receipt of the claim, their society were paying out as much as 10 per cent. in excess of what other societies in most cases were paying. They admitted that the other societies were complying with the Act of Parliament and that they were not, but suggested that the Act of Parliament was at fault. The witnesses were taken to task for quoting special circumstances in support of their contention.

(Q. 7027.) You are quoting one sort of special incident after another. First of all you quote the man who lives seven miles from the colliery; then the man whose household consists of himself and his wife; and then the case of a wave of influenza passing over the whole village. What you tell us here is, that if you habitually, and as a matter of practice, carried out what appears to be the Act of Parliament you would save 10 per cent. of your sickness claims?—Yes.

Age at Entry.

(Q. 7060–3.) The suggestion in this evidence that persons should become insured at 14 instead of 16 was not pressed when it was pointed out that this would tend to stereotype the earlier age as one suitable for children to go to work. They pointed out, however (Q. 7110). that economic necessity induces miners to send their children to work at the earlier age. In any case the principal reason for the proposal (Q. 7063) was not to secure cash benefits but to get the advantage of medical treatment.

Insurance Committees Useless.

(App. XI., 27.) This society is uncompromising in its attitude towards Insurance Committees. It considers them useless and thinks they ought to be abolished.

Complete Pooling of Funds.

For the Lancashire and Cheshire Miners' Federation Approved Society, Mr. Lee Shaw gave evidence. The evidence in this case was almost entirely on the suggestion that there should be a complete pooling of funds.

> (App. XII., 3.) Approved Societies consisting of miners only are almost without exception in the unfortunate position of not being able to provide additional benefits. The fact that a heavy sickness experience and invariably a high maternity-rate experience, in connexion with such societies, has prevented the accumulation of funds to provide additional benefits in itself suggests that the need is equally great for the provision of additional benefits, and possibly greater.

(Q. 7227–67.) This witness considered that with a complete system of pooling of funds, a close central control and the strong sense of duty of local administrators would be sufficient to prevent lax administration or loss of benefit funds.

(Q. 7245–6.) Would it really not mean in the long run—it might not happen at once—that Approved Societies as we know them now would disappear?—Exactly.—Q. I want to ask you whether from the general point of view you would regard the disappearance of Approved Societies as we know them without regret?—I do not know that I should. I think that every town looking after its own insured persons could do it effectively and could administer it with that sympathy which we feel is necessary in the case of sick persons.

(Q. 7382.) The witness advocated an increase in the present rates of sickness benefit.

Pithead Baths.

(Q. 7387.) Are you of opinion that it would tend to improve the health of miners generally if we had a system of pithead baths so that men could bathe themselves properly and change their clothes and go home comfortably attired in all sorts of weathers?—Yes, I hold very definite views. It would be a great advantage to the miners if we had pithead baths, and it would appreciably improve their health.

Mr. Lee Shaw said that pithead baths were established in connexion with the Atherton Collieries and that they were very much appreciated.

EVIDENCE OF MR. ALBAN GORDON.

(App. XIII.) Mr. Gordon is secretary of the United Women's Insurance Society, but gave his evidence as an individual.

Weakness of the Approved Society System.

(App. XIII., 5.) In Mr. Gordon's view, the administrative weakness of the Approved Society system lies, first, in the enormous number of Approved Societies (8427 separate administrative units) with their consequent overlapping and duplicamanagement of cases requiring modern methods of treatment. The present hospitals providing post-graduate work were rather far from the centre. He wondered why more use was not made of the excellent material provided in the Poor-law institutions. Study-leave for panel practitioners was an excellent idea, but most panel practitioners were also engaged in private practice, and even if allowed leave from their panels might not find it easy to escape the multifarious calls of private work.

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* In previous articles the proceedings of the Commission were reported under the following headings: Introductory Note; The Scope of the Insurance Scheme (see THE LANCET, Jan. 31st, pp. 247–8); The Provision of Medical Benefit (Feb. 7th, pp. 301–3; Feb. 14th, pp. 355–6; Feb. 21st, pp. 403–5); Financial Provisions of the Act (Feb. 28th, pp. 454–7); Medical Certification and the Regional Medical Staff (March 7th, pp. 508–9); The Approved Societies and the Money Benefits (March 14th, pp. 564–5; March 21st, pp. 623–4); Evidence of the Hearts of Oak Society (March 28th, pp. 677–9); Evidence of the National Conference of Industrial Assurance Approved Societies and of the Manchester Unity Approved Society (April 4th, pp. 731–3); Evidence of Independent Order of Rechabites, of National Association Friendly Society, and of Miners' Societies (April 11th, pp. 784–6).

References to the printed statements issued as appendices to the reports of the oral evidence are given thus: Section A, para. 69, is shown as "App. A, 69," and references to the oral evidence thus—Q. 1369.

A letter from an overseas post-graduate student was read by Dr. A. J. Whiting, criticising present arrangements on the grounds of the time wasted in getting across London, in the late attendance or failure to attend of appointed teachers, and the inability of some teachers to teach. He suggested that concentrated courses of a month's tuition consisting of six or seven hours a day for seven days a week should be provided to include the examination of selected out-patients, demonstrated by a first-class person, with an exposition of his own views and those of other eminent people as to all modern methods of differential diagnosis and treatment; attendance at operations in all branches, frequent demonstrations on the cadaver, constant revision of anatomy, &c. He would not want to hear lectures or see large collections of cases or to suffer long disquisitions on theory or the autobiography of the teacher. The young graduate should be separated from the man who had been specialising some time.

Mr. J. P. Lockhart-Mummery said the difficulty was a financial one. He had been treasurer of the old Polyclinic and they had always been held up by lack of funds. The post-graduate must put up what money was required himself; the public would not help. The material was all to hand, but unless 5000 practitioners could be found to subscribe £1 a year each towards organisation that material could not be properly utilised.

Dr. R. A. Gibbons agreed with Mr. Lockhart-Mummery, and thought that the profession might be appealed to for a moderate subscription.

Dr. C. M. Wilson said it was most important to find out what they were trying to do. In his experience the general practitioner would not come in large numbers for a period of two or three weeks, but he would come one day a week for special lectures if the man he wanted was there to lecture. The teaching technique was a most important factor; the formation of a new polyclinic would only solve the problem if the teachers were most carefully selected. In Berlin the arrangements were much more convenient as the best people were all concentrated at the University. A practical difficulty was that if the popular teacher gave demonstrations they would soon cease to be demonstrations because so many people would attend them.

Mr. H. J. Paterson said that the London Temperance Hospital had decided to give an experimental course of two weeks' tuition daily at 4.30, consisting of an hour's demonstration of cases followed by a short lecture, the subscription being one guinea.

BERLIN.

(From our own Correspondent.)

Heidelberg as a Spa.

The ancient city of Heidelberg, renowned for its very old university, the ruins of its castle, and its picturesque site, has now added the attraction of a watering place. A spring has been found at a depth of 1000 metres, containing sodium chloride, carbonic acid, and radium, without the presence of sulphates. The spring will be useful to patients suffering from rheumatism, gout, neuralgia, sciatica, arterio-sclerosis, bronchitis, gastric and intestinal catarrh, rickets, and scrofula. The city authorities are anxious to make Heidelberg a first-class spa; the construction of a modern bathing establishment is proposed and other arrangements to secure an efficacious "cure" will be made. They hope that not only the spring and the attractions of the old city, but also the fact that the patients have during their stay the opportunity of consulting leading medical men who belong to the university, will bring a number of visitors.

Poisoning by Ginger-Bread.

Some cases of arsenical poisoning by ginger-bread have recently been observed in Breslau. It was ascertained that the potash which is usually added to the dough to make it softer contained arsenic. The potash had been extracted from the wool of sheep which had previously been treated with arsenic compounds. The Health Office has therefore instructed druggists and chemists to ascertain whether the potash for sale contains arsenic, in which case it is enacted, naturally, that it must not be sold for cooking purposes.

An Unusual Danger.

A doctor of Fürstenwalde, near Berlin, was lately consulted by a man who came, in the guise of a patient, accompanied by an attendant. The latter was supposed to be necessary because the patient alleged himself to have contracted an injury which prevented him from walking upright. He came, therefore, creeping, so that the medical man could not see his face. When the medical man bowed to examine him, the patient tried to strangle him by getting hold of his neck, whilst the companion tried to stab him. Notwithstanding his age, 63, the medical man was able to hold his own until his servant arrived. The assailants fled but were arrested by the police and were sentenced to four and six years' hard labour.

PARIS.

(From our own Correspondent.)

Pre-Natal Work in Paris.

Prof. A. Couvelaire, of the Baudelocque Hospital, in an account of the pre-natal work to which he has contributed much during the last few years, points out that it is insufficient, and often useless, to protect the child only from the moment of its birth. Insufficient because in France nearly 35,000 infants die annually within a few hours of birth, in the last few months of pregnancy, or during labour. Useless because out of the 70,000 to 80,000 infants who die annually in France before reaching the age of one year, more than one-third die because they have been born prematurely or suffer from some congenital disease. Of every 100,000 to 110,000 infants dying between the sixth month of pregnancy and the first year, over 50,000 suffer from pathological conditions existing prior to their birth or die from the effects of difficult labour. Prof. Couvelaire calculates that nearly half the deaths of infants during pregnancy are due to syphilis (11 per cent. of unmistakable syphilis, 17 per cent. of suspected syphilis), and one-sixth are due to other pathological conditions. He publishes some interesting graphs showing the influence of modern specific treatment on syphilis complicated by pregnancy. At the Baudelocque Hospital the death-rate among syphilitics during the first year of life was 62 per cent. when the mother and infant were not treated, it was 26 per cent. when the mother, but not the infant, was treated, and it was only 5 per cent. when both mother and infant were given specific treatment. The pre-natal mortality from syphilis during the last three months of pregnancy also varied greatly, according as the mother was or was not treated. In the first case it was only 30 per cent., whereas it was 70 per cent. when the syphilis, contracted during pregnancy, was not treated. When the syphilis of the mother was of old standing the infant mortality during the last three months of pregnancy was only 8 per cent. when the mothers were given specific treatment, whereas it was 20 per cent. when the mothers were not treated.[1]

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[1] The World's Health, March, 1925.

Early in 1919 Prof. Couvelaire and Dr. M. Pinard opened a dispensary for the diagnosis and treatment of congenital diseases attached to the Baudelocque Hospital, and there are now 28 such dispensaries under the supervision of specialists in obstetrics and syphilis and subsidised by the Ministry of Health. Attached to the Baudelocque Hospital there is also a small maternity home reserved for mothers suffering from tuberculosis and connected with the system of isolating new-born infants from their parents, associated with the names of Grancher and Leon Bernard. Though much has been done in France for infants both before and after birth, Prof. Couvelaire insists that there is still plenty of room for improvement, and he would like to make the early notification of pregnancy compulsory so that timely measures could be taken to prevent disasters which cannot be averted when a medical examination is not made before birth. The examinations he would like to see introduced include, among others, an early obstetrical examination, tests of the urine for albumin and the blood for a Wassermann reaction, radiography, and measuring the blood pressure. He is surely not exorbitant in his demand that "future mothers should have, at least, the same care as that given by breeders to domestic animals."

A Legal Aspect of Gland Grafting for Cretinism.

Dr. Le Fort, who distinguished himself during the war by the skill with which he abstracted bullets and pieces of shell from the neck, has recently got into difficulties with the law on account of a thyroid grafting operation. The donor of the gland was a guillotined criminal, and the recipient was a child suffering from myxœdema and cretinism. Complete success has apparently attended Dr. Le Fort's efforts. The child, a girl 2½ years old, was emotionally inert at the time of the operation, and the first sign of success was observed when she burst out crying, for the first time in her life, on being deprived of a doll which had been given her a few days earlier. She can now laugh and cry. Dr. Le Fort is satisfied with his operation from the strictly scientific and humanitarian points of view. But, unfortunately for Dr. Le Fort, there are other factors in the world besides science and the relief of suffering. There is, for example, the law. And it appears that the authorities are perplexed as to what action to take. They ask: Had Dr. Le Fort the right to purloin any of the appurtenances of the criminal without having first obtained his permission? It might be argued that the criminal had no rights in this matter; that the State having possessed itself so completely of him as to decapitate him, it is rather with the State than with the criminal that Dr. Le Fort has fallen foul. The matter is of some practical importance, as gland grafting seems still to be in the fashion at the present time.

Oculists versus Opticians.

An interesting action between the Paris Medical Society and the Society of Opticians has just been decided before the Ninth Court of Paris. An optician had carried out an ophthalmoscopic examination in order to determine what glasses a person, who had gone to him for advice, should wear. The oculists argued through their society that, by using such a method, the optician had been guilty of the illegal practice of medicine. The Court finally accepted this view, giving judgment against the optician. The case is of interest for this, among other reasons, that it shows how with us, as with you in England, oculists and opticians do not always see eye to eye.

ROYAL MEDICAL BENEVOLENT FUND BALL.—The Kensington division of the British Medical Association is promoting a ball, the profits on which will be given to the Royal Medical Benevolent Fund and its Guild. Under the patronage of H.R.H. Princess Louise, Duchess of Argyll, the ball will take place on Thursday, May 7th, from 9 P.M. to 2 A.M., at the Kensington Town Hall, and tickets, at 1 guinea each or six for 5 guineas, can be obtained from the honorary secretary, Dr. Howard Stratford, 20, Upper Phillimore-place, Kensington, W. 8.

BUCHAREST.

(FROM OUR OWN CORRESPONDENT.)

Deaths Ascribed to Neosalvarsan.

SEVERAL deaths have occurred lately in Roumania following the administration of neosalvarsan. The first case occurred in Targoviste, where a military officer died 30 hours after the intravenous injection of 0·60 g. of neosalvarsan. His death started a great press agitation, in which the neosalvarsan preparation was indicted as the cause of the fatal issue, and certain newspapers even went so far as to say that the Germans were selling poisonous preparations to Roumania in order to devastate the Roumanians. The *Lupta*, a daily paper of good repute, writes as follows: "It is impossible to inundate the whole world with such preparations without the knowledge of the German factory, because several such cases occurred also in France. It is possible, therefore, that we have to deal with a terrible revenge against the Allies, or an unheard-of crime committed by carelessness." Other journals, more moderate, demanded thorough investigation. Thereupon the head of the sanitary department of the Ministry of War travelled to Targoviste. The analytical examination of the organs of the deceased revealed that death was due to the erroneous combination of the preparation. In the two fatal cases which occurred in Bucharest shortly after the above case, post-mortem examinations revealed that the fatal issue was attributable to a faulty preparation of the drug. The Minister of Public Heath has ordered that specimens shall be taken from all the wholesale drug-stores of the land and that these be analysed in the State chemical laboratory. The matter was also brought up in the Senate, where M. Saveanu, Minister of Public Health, replied that everything would be done in order to find out how the harmful preparations got into the country, and that any guilty parties would be adequately punished. On the same occasion the Minister said that a new law would be formulated regulating the admission of foreign preparations into Roumania, and those not on the list of permissible preparations would be confiscated in the Custom houses. The medical papers of Roumania are unanimous in saying that the preparations which have caused the deaths in question must have been smuggled preparations, which are cheap imitations of the original neosalvarsan, and are manufactured wholesale, but not in Germany.

A Strange Method of Controlling Doctors' Incomes.

The financial director of the tax office in a city in the Banat (a province in Roumania) has invented a novel method of controlling the income of physicians, from the point of view of taxation. He has sent a circular to all pharmacists in his district, ordering them to keep special ledgers for noting the prescriptions written by medical men and to submit the list at the end of every quarter to the tax office for inspection.. The medical and pharmaceutical press is very much embarrassed by this proposal, which looks likely to injure friendly relations between physicians and pharmacists. They say that the system is valueless as an index of the physician's income, because if, for instance, Dr. X. writes 500 prescriptions in a year, the ledger will display more than 2000 prescriptions under his name, since the patients, as a rule, repeat one prescription four or five times. On the other hand, a surgeon may earn five times as much as a physician, although he does not write the fifth part of the prescriptions a physician does. Such a system would surely only tempt doctors to avoid writing prescriptions, even in cases where domestic medicines were out of place.

Roumanian Insulin.

Dr. Nitescu, professor of physiology at the University of Cluj, has invented a method whereby he is able to produce a very pure quality of insulin. The preparation, he claims, exceeds all other European insulins in efficacy and is equal to the Toronto insulin. The preparation has been given a trial in the clinics of the Cluj, Bucharest, and Jassy Universities. The results obtained were equal to those obtained with foreign-made insulins. Prof. Nitescu, however, has refused all commercial offers made by foreign concerns, as he wants to control the manufacture of his insulin himself.

The Success of the Abortive Treatment of Gonorrhœa.

Dr. Marinescu, lecturer at the University of Bucharest, writes in the *Romania Medicala* that the successful result of abortive treatment of an incipient gonorrhœa depends upon nine conditions: (1) Treatment to follow coitus within 36 hours. (2) Normal incubation. With excessive virulence the incubation is shorter. (3) The urethral orifice not be red, nor swollen, these symptoms being the signs of great virulence. (4) No thick filaments in the urine, thin threads only are permissible. (5) The urine not turbid. (6) The microscopical examination must reveal the presence of extra-cellular gonococci only. (7) The patient must not have treated himself previously, because bad treatment endangers the success of the abortive treatment. (8) Abortive treatment must always be made by the doctor himself and never by the patient. (9) The treatment must be continued for 10 to 12 days. According to Dr. Marinescu, two therapeutic methods deserve our attention: the urethro-vesical irrigations and the urethral irrigations, or both combined. He advocates 10 per cent. argyrol solution. The first lavage serves to wash out the urethra and it has to be let out immediately, the second injection only is retained for 4 to 6 minutes. This has to be repeated 3 or 4 times a day. If the urethra becomes tender during the course of treatment, and the first part of the urine contains purulent filaments, the irrigations have to be applied less frequently. The treatment has to be continued for at least 10 to 12 days, even if the secretion becomes gonococcus-free earlier. The success of the treatment can be promoted by the administration of internal urinary antiseptics and vaccines.

Conference for Defeating Malaria.

The Supreme Sanitary Commission held a conference in the last week of March in Bucharest to discuss the best methods of successfully exterminating malaria from Roumania. Most of the clinicians of the Roumanian universities were present, and also very many rural doctors. The conference resolved, upon the proposal of Prof. Cantacuzino and Prof. Mezinicescu, to hold a course in the laboratory of Prof. Cantacuzino in Jassy, for the teaching of modern methods of fighting malaria. The courses will be attended by all laboratory doctors of Roumania in successive groups. One course lasts four weeks, and will be free of expense for those taking part. After the termination of the course the campaign against malaria will be commenced in all swampy parts of the country and especially in the swampy district of the Dobrudja.

DONATIONS AND BEQUESTS.—The late Mrs. Sarah Anne Morgan, of Blaenavon, Mon., left £1050 to the Cardiff Royal Infirmary and £100 to Dr. Barnardo's Homes.—Mr. Samuel Wild, cotton spinner, of Oldham, bequeathed 2000 guineas to the Oldham Infirmary for the endowment of two beds in memory of his wife and his sister Mary, 250 guineas to St. Dunstan's Hostel for the Blind, and 115 guineas to Henshaw's Asylum for the Blind.—Mrs. Alice Margaret Bowerman, of Bath, left £300 to Epsom College Benevolent Association, and £200 each to the Mineral Water Hospital, Bath, and the Combe Down Convalescent Home.—Mrs. Ann Zilah Newton, of Derby, who left £5970, subject to certain life interests, bequeathed her estate to the Derbyshire Royal Infirmary.

Correspondence.

"Audi alteram partem."

HOW TO BLOW THE NOSE.

To the Editor of THE LANCET.

SIR,—With reference to a recent contribution on this subject, if this were properly understood and properly taught, I am certain that the health of innumerable poor catarrhal children who crowd our clinics would be immensely improved, and the number of ear cases greatly reduced. In a leading article in your issue of Feb. 14th you give a timely reminder of the hygiene of the nose, and you give careful instructions in, what you consider to be, the proper method of blowing the nose. Although you are in agreement with most text-books, nevertheless, in my opinion, it is not the proper method nor the safest method. Very many of the catarrhal cases have a one-sided block, of greater or less degree, due to septal deviation, polypi, hypertrophied turbinals, &c. So that your instructions "to close one nostril with a finger and blow steadily and strongly down the other and repeat the process through the other nostril" would result in the patient, during one of the efforts, blowing steadily and strongly against an almost completely blocked nose, a danger which you rightly say must be avoided. For many years I have urged that there is but one safe and efficient way of blowing the nose, and it is as follows. Take an inspiration through the mouth, close both lips, and blow down both nostrils. Repeat until the nose is clear. This should be the method after all douching. When a handkerchief is used it should be held loosely round the nose—no pinching of the nose. With these precautions there need be no anxiety about middle-ear infection per Eustachian tube.

I am, Sir, yours faithfully,

Leeds, April 11th, 1925. A. D. SHARP.

CHOLECYSTECTOMY

AVOIDANCE OF INJURY TO THE COMMON DUCT.

To the Editor of THE LANCET.

SIR,—Recent correspondence anent intubation of the common bile-duct for stricture caused by maladroit operations in cholecystectomy, prompts me to crave for space again[1] to call attention to the most effective method for removal of a gall-bag—which eliminates all reasonable possibility of undue encroachment on the common duct.

1. The affected vesicle is seized by two strong pressure forceps by which it is drawn downwards and forwards by "opposite" assistants.

2. The peritoneal reflection at the junction of the liver and gall-bag is then lightly divided with a scalpel sufficient to admit the application of a roll of dry gauze which, within a few seconds, by rotatory action, freely separates the viscus from the fossa fellea down below the level of the orifice (gall-bladder) of the cystic duct.

3. A small sterilised tray is then placed beneath the protruding gall-bag, which is at once divided by the scalpel, between the forceps previously attached, and its contents evacuated.

4. A few more pressure forceps are then applied in order securely to grip the edges of the wound. These forceps, with the tip of the left index finger fixed in the orifice of the cystic duct, are grasped in the palm of the left hand, while with the right fingers a thorough examination of the cystic, common, and hepatic ducts is executed.

5. If a calculus is found in the cystic duct it is usually kneaded between the right fingers into the gall-bag, if found in the common duct the operator walks round[2] to the left side of the patient—and the assistant

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[1] THE LANCET, Sept. 20th, 1913.

[2] The Annals of Surgery, August, 1922.

with whom he has changed places seizes the forceps on the gall-bag making due traction on the same—while the operator inserts his left index finger supine into the foramen of Winslow, by which he advances and fixes the common duct so as to admit of safe incision. This effected, the calculus is turned out. A further thorough examination of the common and hepatic ducts is now made between the left index finger posteriorly and the left thumb anteriorly, and if any more gall-stones are found they are coaxed between these fingers to the exit previously made in the common duct. This wound is not sutured—it invariably closes per se within 20 days.

6. Cholecystectomy. The operator standing on the right side of the patient—with the tip of the left index *finger just fixed in the opening of the cystic duct, and* with the forceps grasping the gall-bladder in the palm of the left hand—makes gentle downward and forward traction so as to admit of the assistant placing a stout ligature around the cystic duct, just proximal to the bulge made from within by the operator's left index tip. The gall-bag is then clipped away with scissors —and as this is being executed a new forceps is applied to the edges of the stump so as to be able subsequently to ligate any bleeding point. A large wisp of silkworm gut is introduced into the depth and the rest of the external wound closed by interrupted double silkworm-gut sutures.

I do not know of any more safe or rapid procedure in abdominal surgery.

I am, Sir, yours faithfully,

Buenos Aires, Feb. 1st, 1925. JOHN O'CONOR.

THE DISCOVERY OF THE "BACTERIOPHAGE."

To the Editor of THE LANCET.

SIR,—In "Martin Arrowsmith," reviewed on March 11th, the author gives the credit for the discovery of the phenomenon of bacterial lysis caused by a contagious filter-passing material to Dr. d'Herelle of the Pasteur Institute. You may remember, however, that in my paper on the Ultra-microscopic Viruses, which was published in THE LANCET of Dec. 4th, 1915, I described the fundamental characters of this lysin—or virus—associated with different bacteria. I showed that it was present in the intestinal tract of man and dogs, and in most specimens of glycerinated calf vaccinia lymph. I pointed out that it passed the finest porcelain filters, that it infected bacteria, and that it could be transmitted from culture to culture indefinitely, besides describing many other characters. I also discussed the nature of the substance, and considered the possibility of its being an ultra-microscopic virus, and of there being different varieties according to the species of bacteria infected. I suggested, moreover, that it would probably be found associated with the dysentery bacilli. At the time of the publication of the paper I was asked to undertake duties in the army in Salonika, and I had no opportunity to work out any additional details connected with the phenomenon, although when in Salonika the whole subject was discussed with the Canadian, French, and British medical officers there. The first work of d'Herelle on the "lysin," named by him the "bacteriophage," associated with the dysentery bacilli was not published until nearly two years after the appearance of my paper.

I am, Sir, yours faithfully,

F. W. TWORT.

The Brown Institution (University of London),
119, Wandsworth-road, London, S.W.,
April 14th, 1925.

*** We have referred to the matter in our columns as the Twort-d'Herelle phenomenon on more than one occasion.—ED. L.

HOSPITAL SATURDAY FUNDS.—The Metropolitan Hospital Saturday Fund last year raised a total of £107,312, an increase upon 1923 of £6377. The number of hospitals and other institutions benefited was 230. Birmingham Hospital Saturday Fund collected £37,700, an improvement of £1380. The committee announce that the abolition of the ticket system is being "seriously considered."

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Tuesday, April 21st.

THERAPEUTICS AND PHARMACOLOGY: at 4.30 P.M.
Annual General Meeting:
Election of Officers and Council for 1925–26.

GENERAL MEETING OF FELLOWS: at 5.30 P.M.
Ballot for election to the Fellowship.

Thursday, April 23rd.

EPIDEMIOLOGY AND STATE MEDICINE: at 5.30 P.M.
Paper:
Dr. Monckton Copeman: Immunisation against Scarlet Fever.

UROLOGY: at 8.30 P.M.
Discussion:
Bacterial Infections of the Urinary Tract.
Openers:
Prof. Leonard S. Dudgeon (Pathological), Dr. E. Lepper (Experimental), Sir John Thomson-Walker (Diagnosis and Treatment).

Friday, April 24th.

STUDY OF DISEASE IN CHILDREN: at 8.30 P.M.
Discussion:
Is the Modification of Cow's Milk Necessary in Infant Feeding?
Openers:
Dr. Leonard Findlay, Dr. Eric Pritchard, Dr. Hugh Thursfield, and Dr. R. C. Jewesbury.

ROYAL INSTITUTION, 21, Albemarle-street, W.
TUESDAY, April 21st.—5.15 P.M., Prof. J. Barcroft: Effects of Climate on the Circulation. (I.)
SATURDAY.—3 P.M., Mr. W. P. Pycraft: Use and Disuse—Effect on Structure of Animals. (I.)

MEDICO-LEGAL SOCIETY (President: The Rt. Hon. Lord Justice Atkin), 11, Chandos-street, Cavendish-square, W.
TUESDAY, April 21st.—8.30 P.M., A paper will be read by the Rt. Hon. Lord Riddell on the Legal Responsibility of the Surgeon. To be followed by a discussion. Members may introduce guests on production of a Member's private card.

MEDICAL SOCIETY FOR THE STUDY OF VENEREAL DISEASES, 11, Chandos-street, Cavendish-square, W.
FRIDAY, April 24th.—8.30 P.M., Papers will be read by Dr. H. H. Dale and Mr. David Lees on the Toxic Effects of Arseno-Benzol Treatment and Their Prevention. A Discussion will follow.

BRITISH PSYCHOLOGICAL SOCIETY (Medical Section) (at the House of the Medical Society of London, 11, Chandos-street, W.).
WEDNESDAY, April 22nd.—8.30 P.M., Dr. A. Wohlgemuth: The "Synthesis" of an Anxiety-Neurosis.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.
MONDAY, April 20th.—11 A.M., Surgical Registrar: Surgical Wards. 12 noon, Mr. Simmonds: Applied Anatomy. 2 P.M., Dr. Scott Pinchin: Medical Out-patients.
TUESDAY.—11 A.M., Mr. Endean: Venereal Diseases. 12 noon, Dr. Burrell: Chest Cases. 2.30 P.M., Mr. Tyrrell Gray: Surgical Wards.
WEDNESDAY.—11 A.M., Medical Registrar: Medical Wards. 2 P.M., Dr. Burnford: Medical Wards. 2 P.M., Dr. Owen: Medical Out-patients.
THURSDAY.—11 A.M., Sir Henry Simson: Gynæcological Wards. 2 P.M., Mr. MacDonald: Genito-Urinary Dept. 2 P.M., Mr. Simmonds: Surgical Out-patients.
FRIDAY.—11 A.M., Dr. McDougal: Electrical Dept. 12 noon, Surgical Registrar: Surgical Pathology. 2 P.M., Mr. Sinclair: Surgical Out-patients.
SATURDAY.—10 A.M., Dr. Saunders: Medical Diseases of Children. 10 A.M., Mr. Banks-Davis: Operations on Nose, Throat, and Ear.
Daily, 10 A.M. to 6 P.M.; Saturdays, 10 A.M. to 1 P.M., In-patients, Out-patients, Operations, Special Departments.

CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn-road, W.C.
FRIDAY, April 24th.—4 P.M., Dr. Andrew Wylie: Dysphagia.

MANCHESTER BABIES' HOSPITAL POST-GRADUATE LECTURES.
FRIDAY, April 17th.—8 P.M., Dr. Leonard Parsons: The Rôle of Fats in the Production and Treatment of Infantile Atrophy.

MANCHESTER ROYAL INFIRMARY.
TUESDAY, April 21st.—4.15 P.M., Dr. F. E. Tylecote: Hilum Tuberculosis.
FRIDAY.—4.15 P.M., Demonstration of Cases. Medical: Dr. F. Craven Moore. Surgical: Mr. J. Morley.

Parliamentary Intelligence.

HOUSE OF COMMONS.

Easter Recess.

Parliament adjourned on Thursday, April 9th, for the Easter Recess. It will reassemble on Tuesday, April 28th.

Monday, April 6th.

International Arsenic Imports.

Captain **Morcing** asked the President of the Board of Trade what quantities of arsenic were imported into the United Kingdom from countries other than Japan during December, 1924, and January and February, 1925, respectively, giving the countries of origin.—Mr. A. M. **Samuel** (Parliamentary Secretary to the Overseas Trade Department) replied: The following statement shows the quantities of arsenic and arsenic compounds imported into Great Britain and Northern Ireland and registered as consigned from the countries named during the months specified. The actual countries of origin as distinguished from countries from whence goods are consigned are not recorded in the trade returns of the United Kingdom.

Articles and countries whence consigned.	December, 1924.	January, 1925.	February, 1925.
Arsenic (Metal).	lb.	lb.	lb.
Germany	—	—	3360
Arsenic, White.	Tons.	Tons.	Tons.
Belgium	10	30	37
France	—	—	10
Portugal	60	120	66
United States of America ..	10	10	—
Brazil	28	27	—
Other Arsenic Compounds.	Tons.	Tons.	Tons.
Netherlands	—	1	3
Belgium	6	5	5
France	31	—	—
Mexico	—	—	5

Scottish Vital Statistics.

The House went into Committee of Supply on a Vote of £1,970,885 for the salaries and expenses of the Scottish Board of Health.

Captain **Elliot** (Parliamentary Under Secretary for Health, Scotland) said that the public health record last year was unsatisfactory. The vital statistics moved adversely. The death-rate, which was 12·9 per 1000 in 1923, moved up to 14·4 per 1000 for 1924. The infantile mortality, which was 79 in 1923, moved up to 98 and the sickness statistics also moved in an adverse direction, the insurance returns showing a rise of from 15 to 20 per cent. all over. The tuberculosis death-rate, however, was as favourable, or slightly more favourable, than those of the previous year. He had investigated the returns as far as he could and it seemed that in Scotland, at any rate, they had moved adversely owing to an epidemic of influenza in the early part of the year. But the position was not so bad as it appeared from the figures he had just quoted. The infantile mortality increase seemed to have been due largely to epidemics of various kinds, and the death-rate, which was 132 in the first quarter of the year under review, was 109 in the current quarter of this year. That at any rate was an encouraging figure.

He did not think that they would have the healthiest year on record, but he hoped that the figures would not be so severe as they were in the previous year. The adult sickness was from 15 to 20 per cent. up. That held good in England as well as in Scotland. The vital statistics moved in the wrong direction, also in France and in Denmark, so that, oddly enough, a wave of ill-health had passed over Western Europe. The returns moved seriously against them in Scotland, something like 1·5; to a lesser extent in England, something like 0·8; to a slightly lesser extent in France, about 0·3; and in Denmark something like 0·1. Some people said that the cause of this simultaneous movement of the vital statistics in the wrong direction all over Western Europe was the sunless summer. He did not know. Certainly the expense of drugs went up tremendously in Scotland—to over 25 per cent.; it went up to £10,000 above the average requirements of the preceding four years, and what that was due to he did not know. The Board were making a grant in respect of measles, an increased grant for pneumonia and bronchitis, and investigations were being made into the cause of infective jaundice, which caused considerable anxiety among the mining population in the East of Scotland. The organism of infective jaundice had been discovered, and the circulars sent out calling attention to it had resulted in the diagnosis as due to this infective jaundice of several conditions which were previously put down to some state of ill-health following influenza. Oddly enough, the same thing appeared in dogs, where the jaundice following an infection by this organism was apparently paralleled by a similar infection which had previously been put down to a post-distemper infection. Apparently it was a disease of rats, to which dogs were also subject, as well as human beings, and it was not merely an industrial disease, but one of which there were a certain number of cases among the rank and file of the population. They had made it notifiable in Scotland.

The difficulty in discussing Scottish vital statistics was that they could not get the people fully to understand how enormously important they were to the life of the community. The declining population of France, for instance, was not due to the low birth-rate but to the high death-rate. The death-rate in France was 17·3, as against something in the nature of 12 for England and Wales. The real policy was determined by the medical officers of health and the other people who worked out the amount of the new population who were going to survive. If the French gave up making 75 mm. guns and took to buying drain-pipes from Paisley they would be a much more formidable nation than at present.

Dr. **Drummond Shiels** asked if the Scottish Board of Health had given any consideration to the introduction of the Spahlinger treatment for tuberculosis. With some other medical Members of the House he had seen a number of cases treated with the new serum and vaccine last week in London and he was very much impressed with them. He knew there were difficulties in the way at present, but he would ask Captain Elliot to encourage his department to coöperate with the Ministry of Health in endeavouring to get some method by which this treatment could be given to sufferers. He did not think they should wait until the treatment was finally and absolutely guaranteed. As regarded the forms of tuberculosis other than pulmonary, he asked Captain Elliot to encourage the treatment of heliotherapy. He thought that the light treatment of tuberculosis was going to be very important, especially in surgical tuberculosis, which included practically all other forms than those associated with the lungs. Light treatment was proving very effective in the City Hospital in Edinburgh. Lupus or tuberculosis of the skin was a very terrible form of disease which very often affected young women most frequently in the face, and if it was not checked it created tragedy which was much worse than death. The Board of Health would do a very useful work in encouraging local authorities to see that the light treatment of this terrible disease was encouraged.

Recently in Edinburgh 103 samples of milk were taken, and 33 of them, or 8·1 per cent., contained live tubercle bacilli; the figures in other towns were very similar. The tuberculosis officer for Edinburgh gave figures in 1922 showing that of all the gland cases 30 per cent. were due to bovine tubercle, 18 per cent. of all meningeal cases, 50 per cent. of all abdominal tuberculosis cases, 58 per cent. of cases of tuberculous bones and joints, and 50 per cent. of lupus cases were due to the bovine bacillus which was practically always transmitted through milk. He was glad that the Board had realised its importance, and he urged that they should bring in at the very earliest moment the Tuberculosis Order of 1914. He wished to ask if anything had been done to carry out the recommendations of the local authorities received in a deputation in 1923 with a view to giving those authorities more power to deal with venereal disease. In the year ending May, 1923, the total attendances at the clinics in Scotland were 289,945, involving 22,500 people. These did not, of course, cover all the cases.

The hon. Member also called attention to the cases of ophthalmia neonatorum. It was disappointing to find in the weekly health returns that these cases were frequently occurring. It was well known that they need not occur. The treatment for prevention was extremely simple, and in many cases on the birth of a child this prophylactic treatment was given in institutions and by private practitioners. A great proportion of the cases of blindness in this country was due to this disease and it was very desirable when it was entirely preventable that the Board should be a little more stringent, and see that it did not appear in the weekly health statistics. Between 30 and 40 per cent. of the cases of infantile mortality were due to premature birth and congenital debility. That was nearly always due to the condition of the mother. These causes were the most important of the causes of infantile mortality and the condition of the mother before the child was born was thus of fundamental importance. In many towns of Scotland child welfare centres and antenatal centres were not properly accommodated. He thought the Board should give a little more attention to this matter. They had refused to extend these centres in many cases. With regard to the nutrition of school-children in 1923, 16,200 children were officially certified as having a state of nutrition below the average, and 600 were certified as having very poor nutrition.

Captain ELLIOT, replying to the debate, said that the Board of Health had two officers investigating treatment by light at present. They would do their best to see that this most fascinating and stimulating subject was fully explored, and the full advantage taken of it for Scotland.

The debate was adjourned.

TUESDAY, APRIL 7TH.

Pay and Pensions of R.A.M.C. Officers.

Sir PHILIP RICHARDSON asked the Secretary of State for War whether he was aware that, after allowing for income tax and the increased cost of living, the pay and pensions of medical officers, and particularly those in India, were smaller in purchasing power than in 1914; whether he was aware that this was the cause of the falling off in the number of entrants to the Royal Army Medical Corps; and whether he proposed to recommend adequate increases.—Sir L. WORTHINGTON-EVANS replied: The falling off in the number of candidates for the Royal Army Medical Corps is due to several causes with which I could not deal within the limits of a Parliamentary answer. I hope that it will be possible to find a remedy without undue delay.

Chemical Warfare Experiments.

Mr. AMMON asked the Secretary of State for War if the 188 soldiers subjected to poison-gas experiments at the chemical warfare research department since 1918 included officers; and what were the number of officers and men, respectively, subjected to such experiments.—Sir L. WORTHINGTON-EVANS replied: The answer to the first part of the question is in the negative. The total number of officers and men of the navy and army subjected to the tests during the period in question is: Officers, 317; other ranks, 207.

Medical Re-examination of Pensioners.

Mr. HAYES asked the Minister of Pensions whether, in those cases considered for final awards and not found suitable and who were given an award for one year until further instructions, it was intended that they should draw the present pension without re-boarding unless the pensioner submitted a claim for increase of pension on the ground of deterioration.—Lieut.-Colonel G. F. STANLEY (Parliamentary Secretary to the Ministry of Pensions) replied: It is the policy of my right hon. friend, as it was also that of his predecessor, to reduce to a minimum the frequent medical re-examination of pensioners who have been on the pension list for four years or more, and the award referred to was designed to extend the period of review in cases where a final award could not be made. Cases will be liable to review with due regard to the nature of the disability and other factors, and while a substantial number of them will probably not be again examined by a medical board, except in the circumstances stated, others will, if it is thought advisable, be re-examined by a board at suitable intervals.

Milk for Mothers and Young Children.

Mr. W. C. ROBINSON asked the Minister of Health what local authorities were now providing milk for mothers and young children.—Sir KINGSLEY WOOD replied: According to the information in my right hon. friend's department, this service is now provided by 420 local authorities in England and Wales.

Maternity and Child Welfare.

Colonel DAY asked the Minister of Health if there were any boroughs or counties that had made no provision for maternity and child welfare; and, if so, would he give the names of the boroughs and counties, and say what action he proposed to take for their introduction.—Mr. N. CHAMBERLAIN replied: The answer to the first part of the question is that provision for maternity and child welfare may be made either by the county council or by the local sanitary authority, and such provision has been made for every sanitary district in England and Wales. The last part of the question, therefore, does not arise.

Morphine, Heroin, and Codeine Manufacture.

Colonel DAY asked the Home Secretary how much opium was purchased by factories in Great Britain during the year 1924; how much morphine; how much heroin; how much codeine was manufactured by the manufacturers in Great Britain during 1924; and how much of each of these narcotics was sent abroad.—Sir W. JOYNSON-HICKS replied: The compilation of the statistics for 1924 is not yet completed and I am able at the present moment to give only the figures of manufacture asked for, which must be regarded as provisional. They are as follows: Morphine, 99,100 oz.; heroin, 16,700 oz.; and codeine, 153,300 oz.

WEDNESDAY, APRIL 8TH.

MENTAL DEFICIENCY (AMENDMENT) BILL.

The Mental Deficiency (Amendment) Bill was read a second time.

This measure, which has been introduced by Sir LESLIE SCOTT, and is backed by Mr. FISHER, Sir HENRY SLESSER, Lieut.-Colonel FREMANTLE, and Mr. HERALD HURST, amends Section 7 of the Mental Deficiency Act, 1913, for the purpose of enabling a defective to be removed from an institution in order to be placed under guardianship. In the Memorandum attached to the Bill it is explained that some defectives after prolonged residence in institutions improve sufficiently to permit of their being sent out of the institution if some arrangements are available for providing care and supervision for them outside. The existing law does not allow of transfer from an institution to guardianship, but only from guardianship to an institution. If it is desired to transfer a case from an institution to guardianship it is at present necessary to discharge the patient and to take all the proceedings necessary to obtain a new order. These proceedings are cumbrous and expensive. Sir LESLIE SCOTT's Bill provides that the same machinery which is available for transferring cases from guardianship to institutions shall be available for the reverse process.

Venereal Disease Grants.

Major-General Sir JOHN DAVIDSON asked the Minister of Health if an annual grant of money was made to the National Council for Combating Venereal Diseases; if so, what was the amount; whether any return was made to the Ministry showing in detail how it was expended; and if such return was available for public information.—Mr. N. CHAMBERLAIN replied: The reply to the first and third parts of the question is in the affirmative. As regards the second part, the amount of the grant varies from year to year and was £9183 for the last financial year. As regards the last part of the question, details of the expenditure of the grants are shown in the annual reports published by the National Council.

Pay of Women in Civil Service.

Mr. TREVELYAN THOMSON asked the Home Secretary how many women in his department were performing the same work as men and receiving equal pay; how many were performing the same work and not receiving equal pay; and what was the reason for the differentiation.—Sir WILLIAM JOYNSON-HICKS replied: One medical inspector of factories receives the same rate of pay as the men performing the same duties. There are 39 other women employed by the Home Office in grades open to men and women whose remuneration follows the general principles already enunciated by the Financial Secretary to the Treasury. In the case of 14 women factory inspectors, the scale for women is identical with that for men so far as regards the lowest grade in the inspectorate.

THURSDAY, APRIL 9TH.

Charges Against Pensions Officials.

Sir WILFRED SUGDEN asked the Minister of Pensions whether he had inquired into the statement made on Feb. 17th in that House by the hon. and gallant Member for Salford West, to the effect that the assessors in the North-Western Region were required by the regional awards officer to reduce a certain number of pensions weekly; that if they affirmed or, in some cases, increased the assessment the regional awards officer sent for them and inquired why they had not produced the regular quota of reductions; and, if he had made such an inquiry, what was the result of his investigations.—Major G. C. TRYON replied: I have made careful inquiry into this allegation and am satisfied that there is no foundation whatever for it. The hon. and gallant Member for Salford (Mr. Hugh Morrison) has given me no assistance, but I have had full reports from the Regional Director, the Commissioner of Medical Services, the Regional Awarding Officer, and the Medical Assessors, all of whom deny the charge absolutely. I need scarcely add that any such practice would be entirely contrary to all instructions, and indeed impossible under the existing organisation of the Regional Office.

Pensioners and Treatment Allowances.

Colonel DAY asked the Minister of Pensions whether, seeing that under the rules of the Ministry a man suffering from attributable disabilities which disabled him from work was not entitled to treatment allowance, unless the treatment prescribed by the Ministry was of such a character as actually to prevent him from obtaining work, and in view of the fact that a man certified by his panel doctor or by a hospital board to be incapable of work was thereby rendered incapable of obtaining work, and at the same time was receiving no treatment allowance, he would take steps to remove what appeared to be a great hardship to ex-Service men.—Major TRYON replied: I would remind the hon. and gallant Member that (as was stated in reply to a similar question on July 28th last) the conditions governing the grant of allowances under Article 6 of the Warrant are not identical with those which determine certification for the purpose of sickness benefit under the National Health Insurance Acts. Allowances under the Warrant are not, therefore, necessarily also payable in all cases, because sickness benefit is obtained. I am not, therefore, in a position to accept the hon. Member's suggestion.

The Development of Garden Cities.

Mr. FENBY asked the Minister of Health whether, in view of the ascertained facts that garden cities had now passed the experimental stage and was a profitable investment of public money, that they relieved congestion of population and traffic, took manufactures and workshops into the country, supplied houses for all classes, showed satisfactory health statistics, stimulated agriculture, horticulture, and market gardening and allotments, created new markets, and developed mentally and physically a vigorous and contented population, he would take steps to appoint garden city commissioners with powers to raise capital, acquire sites, issue loans, and in all possible ways facilitate the establishment of garden cities.—Sir H. BARNSTON (Comptroller of the Household) replied: My right hon. friend has every sympathy with the development of estates on garden city lines, and is watching with interest the progress which is being made; but in his opinion further experience is necessary before considering the establishment of special machinery such as the hon. Member suggests.

Salary of Pensions Department Medical Officers.

Colonel Sir ARTHUR HOLBROOK asked the Minister of Pensions whether the increase of salary of £50 per annum to be given to full-time medical officers of the Ministry whose services were being retained was in lieu of bonus or gratuity; and, if not so granted, would he explain why it was granted, seeing that the work had been and was steadily diminishing in comparison with that of the past five or six years.—Major TRYON replied: The increase in question is not of the nature either of a bonus or a gratuity, but is part of a general revision of the rates of remuneration of the administrative medical staff of the Ministry. In regard to the last part of the question, I would point out that while the work of the Ministry as a whole has diminished, the staff has also been reduced to a corresponding extent, and the work and responsibilities of individual officers remain as great as before.

Widows and Orphans in England and Wales.

Colonel DAY asked the Minister of Health the number of widows in England and Wales; and, if possible, the number of fatherless children and orphans under 14 years of age, respectively.—Mr. N. CHAMBERLAIN replied: For England and Wales the desired figures according to the 1921 Census were as follows:—

—	Widows.	Children under 14 years.		
		Father dead.	Mother dead.	Both parents dead.
England	1,528,093	613,531	208,581	43,518
Wales and Monmouth	93,665	41,221	20,615	3,297
Total	1,621,758	654,755	229,196	46,815

White Lead Poisoning.

On the motion for the adjournment of the House for the Easter Recess until April 28th,

Mr. RHYS DAVIES raised the question of the attitude of the Government to the International Labour Conventions. He said that the growth of the number of cases of lead poisoning was rather disturbing. In 1922 there were 240 cases and 20 deaths; in 1923, 327 cases and 25 deaths; and in 1924, 186 cases and 32 deaths. The Labour Party desired to see a Bill introduced entirely prohibiting the use of white lead in paint. He asked that the question of anthrax should not be dropped, and that steps should be taken to appoint Dominion delegates so that this subject might be raised on behalf of the Empire at Geneva.

Sir W. JOYNSON-HICKS, Home Secretary, said there were great difficulties in dealing with the question of white lead, as there were two schools of thought, one which desired to prohibit its use altogether, and the other which wanted to regulate it. He hoped to bring in a Bill, which was already in draft, directly after Easter, and that agreement would be reached among the users and the manufacturers of white lead so that he would be able to make regulations. These regulations would deal with the present methods of painting buildings and prohibit the use of white lead except in the form of paste and paint ready for use. They would also deal with the danger arising from the rubbing down or scraping of old paint, and prohibit altogether, or modify, the periods during which young persons might work with white lead. He would give the House this further undertaking that if experience of the working of the regulations proved that they did not carry out what was hoped, and did not enormously diminish the illness and deaths that arose from the use of white lead, he would come to the House and ask for further powers. As to the danger of anthrax arising from imported wool, the Government disinfecting station at Liverpool was doing good work in minimising the danger. The Government were anxious to have it established that all wool should be disinfected before it came to this country. But the Geneva Conference would not pass such a proposal, and it rejected by 50 votes to 41 a motion by Mr. Rhys Davies himself to have the question raised again by placing it on the agenda of this year's meeting. The Empire was not unanimous. The Government were willing to try to get the Empire to agree, but the hon. gentleman knew the difficulties.

Sir A. STEEL-MAITLAND, Minister of Labour, said that the reason why the Maternity Convention had not been ratified was that it was generally considered that the position of married women in this country under the National Health Insurance Acts was different from that provided in the Convention, and on the whole secured them as favourable conditions.

Medical News.

UNIVERSITY OF LONDON: SENATORIAL ELECTION.—The nominations for Representatives of Convocation on the Senate of the University have now gone in, and in the Faculty of Medicine Dr. Graham Little, the Member of Parliament for the University, is opposed by Mr. T. B. Layton, who stands with the support of the Twentieth Century Society of London Graduates. Dr. Graham Little being the President of the University of London Graduates Association, the election may be presumed to be a trial of strength between the two bodies, the main point at issue being the adoption or rejection of the Haldane Report.

Three lectures on Recent Advances in the Study of Living Cells will be given at King's College, Strand, London, W.C., by Prof. Robert Chambers, professor of microscopic anatomy in Cornell University, New York, on April 27th, 28th, and 29th, at 5.30 P.M. Admission to these lectures is free.

ROYAL COLLEGE OF SURGEONS OF EDINBURGH.—At the recent dental examinations, just concluded, out of 26 candidates entered the following 13 passed the Final Professional Examination and were granted the diploma L.D.S. R.C.S. Edin.:—

David Lumsden, Thomas D. Gould, Douglas B. Cruickshank, Annie M. Stephen, Temple F. M. Gibson, John W. Swan, Peter Adair, Edward P. Tait, John Shearer, James McK. Proctor, Norman G. Imlach, John D. Cooper, and Robert J. Snodgrass.

The following candidates passed in the subjects of—

Pathology.—Esmee K. Wilson, Pieter F. Zuidmeer, and Walter E. Phillips.

Medicine and Surgery.—Esmee K. Wilson, Guthrie Russell, and Mela R. Soni.

Dental Subjects.—John Baker.

UNIVERSITY OF ABERDEEN.—At the graduation ceremony held recently, degrees in medicine were conferred on the following successful candidates:—

DOCTOR OF MEDICINE.

Martin M. Cruickshank (in absentia) (awarded honours for thesis), Richard R. Trail (awarded commendation for thesis), John MacLennan (old regulations), and Alexander Mitchell.

BACHELOR OF MEDICINE AND BACHELOR OF SURGERY.

With Second-class Honours.—*Charles S. D. Don, *William A. Mair, *James A. R. Paterson, and Donald S. Stewart.

Ordinary Degree.—*Philip Bayer, Henry C. Bonney, William Booth, Leon Chanock, *Alexander Cruickshank, Ronald A. Cumming, John M. Davidson, Gilbert M. Davis, Charles A. Dean, Jessie R. G. Dingwall, Albert T. Duncan, George N. Duthie, Margaret M. Gair, Alexander Galloway, James A. Gordon, John D. Gordon, Thomas R. Gordon, Janet Johnston, William Kelly, David B. Laing, John MacArthur, *Patrick D. A. MacDonald, Kenneth C. MacKenzie, Donald N. MacKinnon, Frank S. McLean, Anne G. I. MacLennan, George W. Mearns, Lewis Morgan, James A. Mulligan, Norman M. Munro, Oswald G. Prosser, William J. Ratt, William P. E. Richards, James Robertson, *Maurice C. G. Robertson, Albert A. Simpson, *John T. Sorley, William R. Soutter, Barbara W. Spark, John I. Taylor, Hector M. Walker, James D. Walker, *Richard W. H. Webb, Adam D. F. White, Alexander H. Wilson, Charlotte M. Wilson, and Douglas E. Wilson.

* Completed Final Medical Professional Examination with distinction.

DIPLOMA IN PUBLIC HEALTH.

Agnes M. E. Benzie, John C. Kerrin, Christina R. Laing, John C. Milne, Lily M. Watt, and Mabel Wilson.

Hunterian Society.—The annual general meeting of this society has unavoidably been postponed, and will now take place on May 11th, at Simpson's Restaurant, Cheapside, London.

The Royal Academy of Sciences of Copenhagen has nominated Prof. E. H. Starling, Foulerton Research Professor of the Royal Society, a foreign member of the Physiology Class.

Royal Institution.—A general meeting of the members of the Royal Institution was held on April 6th when the special thanks of the members were returned to Sir Humphry Davy Rolleston for a gift of a large number of letters from Sir Humphry Davy.

Freemasons Hospital and Nursing Home.—The following have been appointed as members of the honorary consulting staff: Dr. Newton Pitt, Sir James Purves-Stewart, Mr. A. Baldwin, Mr. Ernest Clarke, Sir James Dundas-Grant, Mr. T. H. Openshaw, Sir D'Arcy Power, and Mr. Percy Sargent. Sir D'Arcy Power has been appointed chairman of the Medical Advisory Committee of the Institution.

Royal Faculty of Physicians and Surgeons of Glasgow.—At the monthly meeting of the Faculty, held on April 6th, Drs. James P. Brown, Arthur C. L. La Frenais, and Thomas M. Newton were admitted, after examination, as Fellows of the Faculty.—At the same meeting the Faculty elected Dr. James A. Adams as their representative on the General Medical Council for the period of five years.

University of Birmingham.—A three months' course of post-graduate demonstrations will be given at the General Hospital, Birmingham, on Tuesdays, and at the Queen's Hospital, Birmingham, on Fridays, from 3.30 to 5 P.M., commencing on April 21st. The course will include demonstrations on medical and surgical cases, skin diseases, ophthalmic cases, children's diseases, urinary diseases, insulin treatment, &c. Further information may be obtained from the Clerk to Clinical Board, University, Edmund-street, Birmingham.

Tavistock Clinic.—A course of ten lectures on the Treatment of Functional Nerve Disease will be given at the Tavistock Clinic for Functional Nerve Cases by Dr. H. Crichton-Miller, Dr. S. Roodhouse Gloyne, and Dr. J. R. Rees, on Tuesdays, at 5.30 P.M., beginning May 5th. A syllabus of the lectures and further details may be obtained from the hon. lecture secretary at the clinic, 51, Tavistock-square, London, W.C. 1.

British Empire Cancer Campaign.—The following grants have been made: £2500 to the Cancer Research Department of the Cancer Hospital (Free); £3000 for cancer research purposes to the Middlesex Hospital; £100 to St. Mark's Hospital, City-road, for further cancer investigations; £500 to Dr. Thomas Lumsden, of the Lister Institute, for original cancer research; £300 to Dr. Malcolm Donaldson to facilitate research into certain forms of inoperable cancer; £1695 to St. Bartholomew's Hospital for the formation and maintenance of a special radiology research department into cancer; and £1100 (additional) to the Middlesex Hospital for similar purposes, subject to the confirmation of the Radiology Committee of the Medical Research Council. These sums are additional to grants in furtherance of cancer research of £6180 made during the current financial year and are exclusive of the sum of £5000 for radium for the use of various institutions and organisations.

West Kent Medico-Chirurgical Society.—A meeting was held at the Miller General Hospital, Greenwich, on April 3rd, with Dr. H. S. Knight, the President, in the chair, when an address and demonstration on Anæsthetics for Operations in the Region of the Mouth and Nose was delivered by Mr. E. Stanley Rowbotham, of the Sidcup War Hospital. The speaker described the method by which two catheters were used for intubation of the larynx, one for insufflation into the trachea, and the other, the larger, for expiration. The catheters were tied together and passed as far as the bifurcation of the trachea. A free airway and absence of septic lung trouble resulted. The supply of the air current might be provided by a cylinder of compressed gas, an electric motor, or bellows. The anæsthetic vapour required to be warmed as it passed direct to the lungs. An anæsthetic was first given in the ordinary way, then the direct laryngoscope was used and the tubes were passed. For the nasal passage an adrenalin spray was used. Double intubation was necessary for mouth and tongue operations. Chloroform had to be used in diathermy operations in order to avoid the risk of an explosion. The lecturer then demonstrated the mechanism of the different pieces of apparatus.

Medical Hydrology.—Under the auspices of the Committee for the Study of Medical Hydrology in England, a course of lectures and demonstrations will be held in the Senate room of the University of London, from April 27th to 30th. Lectures will be given by Dr. J. C. Thresh on Types of Water, Mr. Dewey on Hydro-geology, Prof. J. Barcroft on the Capillary Circulation of the Skin, Dr. Fortescue Fox on Heat in the Treatment of Disease, Dr. J. B. Burt on Disorders of Digestion, Dr. V. M. Coates on Arthritis, and Dr. Rupert Collins on Neurasthenia, followed by a visit to Buxton. Those proposing to be present at the lectures or at Buxton are asked to notify the hon. secretary, Hydrology Committee, University of London, South Kensington, S.W. 7.

The Late Dr. C. W. Hayward.—Charles Williams Hayward, M.D. Edin., D.P.H. Camb., died on April 3rd, at Meigle, Perthshire, aged 66. He was born at Vernon House, Mount Vernon-road, Liverpool, and was the son of the late Dr. John W. Hayward, of Liverpool. He joined his father in practice there soon after qualifying M.B., C.M. at the University of Edinburgh in 1880. He studied at the University of Edinburgh and Vienna, and became M.R.C.S. and L.R.C.P. London in 1888. In 1889, at the University of Edinburgh, his thesis for M.D. was considered worthy of commendation. A man of singularly varied acquirements and great versatility, he was physician, musician, playwright, politician, and a barrister-at-law of Gray's Inn. He was called to the Bar in 1898, but did not practise. His father was an ardent Liberal and Dr. Hayward carried on the political traditions in support of that party in Liverpool. In 1911 he was selected by the Liberals to stand for the Eddisbury Division, but was not elected to Parliament. He was an enthusiastic supporter of the National Insurance Act. Besides some contributions to medical literature, he was the author of two plays dealing with Rome of the classical era, and collaborated in writing a musical comedy. He was an honorary physician of the Liverpool Hahnemann Hospital. His remains were cremated at Glasgow on April 7th.

The late Dr. J. Dulberg.—Joseph Dulberg, M.D. Würzburg, who was born in Roumania 63 years ago, was a well-known figure in Manchester medical circles, more especially amongst the Jewish community, where his activities were manifold. Two years ago his health broke down and he retired to Southport, where he died on April 8th in his sixty-fourth year. He left Roumania when a young man, went to Berlin, where he studied law, graduating as Doctor of Law in 1882. He then went to Manchester, where his father had established himself in business, and studied medicine at Owens College. He completed his medical studies at Würzburg, where he graduated M.D. in 1891, and having obtained the L.S.A. in 1892 began practice in Manchester. Dr. Dulberg was one of the founders of the Jewish Hospital in Manchester, of which he was an honorary physician. He acquired an intimate knowledge of hospital work when a resident assistant physician at the Julius-Spital in Würzburg. Dr. Dulberg was a prolific writer on medical subjects. In 1905 he translated Senator and Kaminer's book in two large volumes on "Health and Disease in Relation to Marriage and the Married State," besides writing on "Personal and Family History in Relation to Life Insurance," "Continental Spas," and "Sterile Marriages." In 1915 he volunteered for military service and was in charge of the Seaforth Military Hospital, and afterwards of the Neurasthenic Hospital at Brinnington, near Stockport, and was prominent in the territorial movement promoted by Israel Zangwill. He took a keen interest in psycho-therapeutics. He was a J.P. of the city of Manchester and a magistrate for over 16 years.

Appointments.

Donald, H. G., M.B., Ch.B. Aberd., has been appointed Medical Officer of Health, Auckland Rural District Council.

Fraser, J., M.D., Ch.M., F.R.C.S. Edin., Professor of Clinical Surgery in the University of Edinburgh.

Parrott, A. H., M.D.S. Birm., L.D.S. R.C.S. Eng., Lecturer in Dental Materia Medica and Therapeutics at the University of Birmingham.

Smith, H. G., M.D. Lond., D.P.H., Medical Officer of Health, School Medical Officer, and Police Surgeon, Lincoln.

Taylor, A. L., M.B., Ch.B., F.R.C.P. Edin., Senior Assistant Medical Officer at the County Mental Hospital, Burntwood, Lichfield.

Royal Alexandra Infirmary, Paisley: Caldwell, J., M.B., Ch.B. Glasg., Resident House Physician; Pollock, A. M., M.B., Ch.B. Glasg., Gillies, D. R., M.B., Ch.B. St. And., Resident House Surgeons.

Vacancies.

For further information refer to the advertisement columns

Barnet, Wellhouse Hospital.—Res. M.O. £150.

Birmingham and Midland Homœopathic Hospital and Dispensary.—Res. H.S. £175.

Brighton, Sussex Throat and Ear Hospital.—Hon. Clin. Asst.

Bury Infirmary.—Hon. Ophth. S.

Cairo School of Medicine.—Asst. Prof. of Chemistry. L.E.720.

Canterbury, Kent and Canterbury Hospital.—Third Res. M.O. £125.

City of London Hospital for Diseases of the Heart, &c., Victoria Park, E.—H.P. at rate of £100.

Colchester, Essex County Hospital.—Asst. H.S. and Reg. £150.

Dartford, Kent, City of London Mental Hospital.—Med. Supt. £1250.

Eastcote, Middlesex, St. Vincent's Orthopædic Hospital.—Res. M.O. at rate of £150.

East London Hospital for Children and Dispensary for Women, Shadwell, E.—Res. M.O. £200. Also H.P. at rate of £125. Also Morning Cas. O. at rate of £120.

Evelina Hospital for Children, Southwark, S.E.—H.S. at rate of £120.

Holland County Council, Lincolnshire.—Asst. County M.O. £600.

Leeds Public Dispensary.—Jun. Res. M.O. £150.

London Lock Hospital, 91, Dean street, W.—Tempy. Hon. S. to Out-patients.

Manchester County Mental Hospital, Prestwich.—Locum Tenens 8 guineas weekly.

Nottingham, Bagthorpe Institution and Infirmary.—Res. Asst. M.O. at rate of £300.

Plymouth County Borough.—Asst. M.O.H. £750.

Queen's Hospital for Children, Hackney road, Bethnal Green, E.—Asst. S.

Rochester, St. Bartholomew's Hospital.—Third Res. M.O. at rate of £200.

Rochford Hospital.—Asst. Res. M.O. £125.

Royal College of Surgeons of England.—Examiners in Anatomy, Dental Surgery, &c.

Samaritan Free Hospital for Women, Marylebone road, N.W.—Reg. at rate of £100.

Sheffield Royal Infirmary.—Surg. Reg. £200. H.S. £80. Also Dental S.

Sutton, Surrey, Downs Hospital for Children.—Asst. M.O. £350.

Westmorland Sanatorium, Meathop, Grange-over-Sands.—Res. Asst. M.O. £350.

Whittingham County Mental Hospital, Preston, Lancs.—Two Tempy. M.O.'s. Each £7 7s. weekly.

Winchester, Royal Hampshire County Hospital.—H.S. £150.

Winsley Sanatorium, near Bath.—Asst. Res. M.O. £250.

The Chief Inspector of Factories, Home Office, London, S.W., announces the following vacant appointments: Cromer, Norfolk; Higham Ferrers, Northants; Sandy, Beds; Silverton, Devon; Lanchester, Durham; Overton, Flint.

Births, Marriages, and Deaths.

BIRTHS.

LYSTER.—On April 4th, at Great Baddow, Essex, the wife of Ronald Guy Lyster, M.B., B.S., of a son.

McMORLAND.—On April 3rd, at Brookfield, Colyton, Devon, the wife of Dr. J. Bruce McMorland, of a son.

MARRIAGES.

BRIDGES—LUARD.—On March 31st, at St. Leonard's Church, Lexden, Colchester, Major Robert Francis Bridges, R.A.M.C., to Charlotte Lucy Chauncy, second daughter of the late Edward Chauncy Luard, and of Mrs. Luard, of Holly Lodge, Colchester.

ELLIOTT—RICHARDS.—On April 4th, at St. Paul's, Hampstead, London, Charles C. Elliott, D.S.C., M.D., M.R.C.S., of Seaford, Sussex, to Lorna Richards, M.B., Ch.B., second daughter of the late Mr. C. Hooper Richards and Mrs. Richards, of Birmingham.

RAINER—BOULTON.—On April 4th, at St. Paul's Church, Herne Hill, S.E. 24, Charles Farrell Rainer, M.R.C.S., L.R.C.P., eldest son of the late Charles Oliver Rainer, of Georgetown, Demerara, British Guiana, and of Mrs. Alice Maud Rainer, Upper Norwood, London, to Kathleen May, widow of the late Raymond Wright Boulton, R.F.A.

DEATHS.

EAGER.—On April 8th, at Perryn road, East Acton, Thomas Cawley Eager, M.R.C.S., L.R.C.P., late of Woking, in his 80th year.

PRICHARD.—On April 8th, after an operation, Evan Christopher Prichard, M.D., of Horse Fair, Banbury, aged 47.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

BERKSHIRE HOSPITALS.—Princess Mary last week opened a new nurses' home at the Royal Berkshire Hospital, Reading, which will accommodate a staff of 80 nurses. The Royal Berkshire and Associated Hospitals Aid Committee now has a membership of more than 100,000, and last year 77 per cent. of the patients treated at the Reading institution were contributors to the scheme. Of the £19,000 collected in 1924, £12,000 came from the country districts.

Notes, Comments, and Abstracts.

THE DUTIES OF MEDICAL OFFICERS OF HEALTH.

THE more important functions, both general and specific, of medical officers of health in England and Wales are summarised in a memorandum[1] just issued from the Ministry of Health. Those to whom it is primarily addressed will for the most part be familiar with its contents, but will appreciate the convenience of possessing a concise pamphlet which amplifies Article 11 of the Sanitary Officers Order, 1922 (*a*), where the duties of the medical officer of health are specified with extreme brevity. An index to the statutes, orders, and regulations relating to the powers and duties of medical officers of health is arranged alphabetically in an appendix, so that the M.O.H. will find no difficulty in gaining further information as to his duties and rights. Doctors in private practice do not always realise how extensive are these duties and rights and occasionally resent as officious interference an investigation into the circumstances of cases of infectious disease or of tuberculosis, or active encouragement of local welfare centres. It is to practitioners, therefore, that we commend the study of this pamphlet.

HEALTH HINTS FOR SCHOOL-CHILDREN.

THE Borough of Hornsey is to be congratulated on a useful method of propaganda in regard to the prevention of disease. A little book with the title "Health Hints for School-Children," written by Dr. A. T. Nankivell, the school medical officer, has been distributed in all the public elementary, secondary, and private schools in Hornsey, and gives in clear language hygienic counsel in regard to teeth, dirt and disease, drains, the dust-bin, exercise, fresh air, food values, eyesight and sleep, with notes on the danger of flies and how to seek municipal advice where sanitary house defects or infectious diseases are in question. The illustrations are simple and good, and the lessons, if taken to heart by a school population, would certainly promote the public health.

VENTILATION AND HUMIDIFICATION IN COTTON MILLS IN INDIA.

THE subject of ventilation and humidification in cotton mills has been under discussion for many years, as it was found that in most mills the necessity for the employmen of artificial humidification has proved a serious obstacle t improvements of conditions. In 1921 the Government o India instituted a special inquiry which was entrusted t Mr. T. Maloney, *M.C.*, A.M.C.T., who was instructed (1) t obtain accurate observations regarding the method o humidification and ventilation employed in cotton mills an their effect on working conditions, and (2) to evolve recommendations designed to effect a marked amelioration in conditions without serious detriment to the industry.

After about 18 months spent in the inquiry Mr. Maloney has presented his report, and his general conclusion was that "while it has not been definitely proved that health is materially affected in every case, it is significant that the physique of the average cotton operative is much lower than that of workers of similar castes and wage-earning capacity in other trades, and that weight decreases after a few months' continuous service." Mr. Maloney suggests the use of the kata-thermometer for measuring the cooling power of the air, and the standard of cooling power as measured by the wet kata cooling power should be 11 (milli-calories per sq. cm.) at head level. Although a considerably higher standard would be advantageous, as a result of his observations Mr. Maloney considers that this standard would prevent danger to health and serious discomfort among the operatives, and generally a vast improvement in existing conditions. In some centres like Madras the proposed standard is already exceeded for most of the year, and little difficulty would be met with in conforming to the standard continuously, but, in other areas, like Ahmedabad and Bombay, the cooling power seldom remains above the standard for the whole day, and often fails to attain it at any time in the course of the day. It is proposed to allow a period of two years to enable them to introduce adaptations and arrangements necessary for producing the required standard of cooling. The report also proposes (*a*) the provision of an adequate number of hygrometers in departments where humidity is likely to be excessive, and (*b*) the maintenance of humidity registers containing records of the wet and dry bulb temperatures. It is further suggested that where steam is used for the purpose of artificial humidification, its introduction should cease when the dry bulb temperature of the room exceeds 85° F. Factory inspectors are to be empowered to insist on the adoption of methods designed to reduce temperature and particularly to place restrictions on the methods of construction in the case of new mills. For existing mills it is suggested that inspectors should be able to insist on white-washing of roofs or of spraying them with water when temperatures are excessive.

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[1] Memorandum on the Duties of Medical Officers of Health in England and Wales (other than the Medical Officer of Health of the London County Council and Medical Officers of Health of Port and Riparian Sanitary Authorities). 1925. H.M. Stationery Office. Pp. 22. 2*d*.

The Government of India are apparently inclined to support the proposals made in Mr. Maloney's report, and it may be anticipated that some, if not all, of the suggestions made will be introduced within the next year or two.

"SCIENCE, CRIME, AND CHRISTIANITY."

UNDER this title a sermon was delivered by Mr. Arthur R. L. Gardner at the Church of St. Martin-in-the-Fields, London, on Jan. 20th, the anniversary of the death of John Howard, the Prison Reformer, who was born in 1790; the Howard League for Penal Reform, 18, Savoy-street, London, W.C. 2, has now published the sermon in pamphlet form (*2d.*). Mr. Gardner outlines the progress of scientific thinking since pre-Victorian days, and recognising the tendency to mental inertia, points out "Our danger in this country . . . is not that Science will be impeded in her advance, but that she will advance in every other country except ours." He believes that the first step in removing the conditions which engender criminality is to inquire into the whole system of established thinking about God and human nature, and he quotes Dr. Hamblin Smith, the medical officer of H.M. Prison at Birmingham, that there are abnormal mental conditions, not yet recognised by the law, which are potent factors in the production of crime. From the standpoint of the Church, the author of the sermon says scientific penal reform means the disappearance of the Puritan doctrine of the State punishment of wickedness and vice and all the untold misery that it has caused. He does not turn away from the question Pilate asked, but gives as the answer, "The mind of Science incarnate on earth, revealing the true mind of God to the world, in order to save it from all the self-inflicted misery of centuries upon centuries of wrong thinking about God and Human Nature."

WILLIAM LYNN, JOHN HUNTER'S FRIEND.

Hunterian orators at the Royal College of Surgeons of England have for many years shown great ingenuity in saying something new about John Hunter, and certainly Sir D'Arcy Power's Oration presented the master in a new way. John Hunter had not before, that we can remember, been presented through the medium of reminiscence, and the circle of his friends and pupils, who survived into the nineteenth century, were singularly dumb. In fact, Jesse Foot's libels are more detailed than their eulogies. That William Lynn should have left no record of Hunter has always seemed surprising. He was one of the chief of Hunter's associates and assisted him in the formation of his museum, but he left no account of his master and our knowledge of himself is fragmentary. At the time of his death in 1837 THE LANCET described only his last day on earth, and the "Dictionary of National Biography" appears silent.

William Lynn was born in 1755, and at the time of his death was almost the last survivor of the personal friends of John Hunter. We are tempted to believe from what little we know of him that he preserved much of the Hunterian manner. Barnard Holt, F.R.C.S., writing in 1861, records a quaint pronunciation used by him. "*Nater*, gentlemen, *Nater* cures the disease," he would exclaim during lectures "in his eccentric way," when referring to the *vis medicatrix naturæ* and the Hunterian belief therein. Can it be that an old pronunciation lingered on here from another and more famous speaker's lips? Lynn was not apparently an illiterate and was not therefore guilty of a Cockneyism. We prefer to think that he remembered a Scotticism. He seems to have been better known as an operator than as an author, but in 1786 he published in elegant enough English a short tract, previously read by him to the Royal Society, entitled "The Singular Case of a Lady who had the Small-pox during Pregnancy; and who communicated the Same Disease to the Fœtus." The pamphlet is based largely on a previous case described by John Hunter. As an operating surgeon Lynn was famous, and we read how in 1790 it was the custom of groups of students from the united hospitals of Guy's and St. Thomas's to visit in turn the other hospitals of London, there to witness the operations of Sir James Earle, William Blizard, and Lynn. Thomas Martin, one of the original 300 Fellows of the Royal College of Surgeons, was among these migratory visitants. He saw Lynn at work at the Westminster Hospital, but his descriptions of these "masterly operations" died with him. Silence settles on the memory of William Lynn till 1837, when THE LANCET informed its readers that he died suddenly whilst getting into his carriage at a quarter to two in the afternoon of June 24th. He had just been calling on a relation near Bloomsbury-square and was returning to his house at Clapham. He was in the best of spirits, "and stated, when allusion was made to the recent decease of his late Majesty [William IV.], that he well recollected the death of George II." (THE LANCET, 1836-37, vol. ii.) His pleasant portrait, reminiscent of Mr. Pickwick, by J. Ward, is still at the Royal College of Surgeons in Lincoln's Inn-fields, but it cannot tell us what the living original knew of his famous friend, John Hunter.

HEALTH CONDITIONS IN BRUNEI.

Mr. E. E. F. Pretty, the British resident in this native State, situated on the north-west coast of Borneo, has issued a report for the year 1923, from which it appears that the death-rate was roughly 10 per mille and the birth-rate 52·4 per mille as far as the figures available show. The total European population at the end of the year was 35, and their health was good. Malaria was less prevalent than in 1922. The percentage of school-children showing splenic enlargement fell from 18·39 to 13·01. The medical officer states, in regard to ankylostomiasis, that the indications received of this disease did not show any great difference from those of the previous year, but until a proper campaign is undertaken, with routine and exhaustive examination, it will be impossible to estimate the prevalence of the infection. It must be borne in mind that the main native population live actually in huts erected over a tidal river, and the dejecta of more than three-quarters of the population are passed straight into the river. There is thus not an urgent necessity to undertake a proper survey of this infection in Brunei. Almost the same remarks apply in regard to amœbic dysentery, of which very few cases are seen. Pulmonary tuberculosis is fairly prevalent in the State, but it is almost impossible to get the natives to come for treatment. Judging from the cases of people suffering from other diseases who are seen by the medical officer, and in whom pulmonary tuberculosis is found on examination, it may be estimated that at least 3 per cent. of the general population are harbouring active tubercle bacilli in their lungs. The total number of vaccinations done in the State was 812, as against 442 in 1922. This increase is due to vaccinations amongst Kedayans who previously had refused to be vaccinated. The Brunei Malays do not like their children to be vaccinated until they are over 1 year old. Vaccination is not at present compulsory. The Brunei native is very conservative in the matter of health and treatment for ill-health. He is extremely reluctant to be seen by a European medical man, and when seen he is still more reluctant to take the treatment prescribed. His prejudice against admission to hospital is so deeply rooted as to make him rather lose his life than enter. This applies in still greater force, if possible, to his female relatives. There is no hospital in Brunei. Those requiring hospital treatment, and willing to submit to it (chiefly Government servants and prisoners), are taken to Labuan Hospital, to which the Brunei Government pays a small annual subscription. The rubber estates almost entirely employ the Brunei Malays as their labourers, and these, as already stated, object to treatment by a European medical man. There is no system of night-soil sanitation in Brunei; even the Asiatic population living on the banks of the river use latrines which are built over the river, and the dejecta are taken away by the tide. There were no epidemics of infectious or contagious disease in 1923. Dr. T. C. A. Claverton, the medical officer at Labuan, acted in the same capacity in Brunei, paying altogether 17 visits of varying duration. He has won the confidence of the natives to a remarkable degree. The Brunei dispensary, in charge of Dresser Leong Ah Ng, treated a total of 2249 patients during the year. The area of the State of Brunei, which was placed under British protection in 1888, is about 4000 square miles, and the population is estimated at about 30,000, chiefly Malays and Borneans. The mean temperature in the shade in 1923 was 80·73° F., and the rainfall, as registered at seven stations, ranged from 99·26 inches to 161·01 inches for the year.

PUBLIC HEALTH IN THE STRAITS SETTLEMENTS.

A REPORT for the year 1923, prepared by the Colonial Secretary, has recently been issued. The colony consists of the island of Singapore (with its dependencies), Penang (including Province Wellesley and the Dindings), Malacca, the Cocos or Keeling Islands, Christmas Island, and Labuan. The estimated population of Singapore is 457,571, of Penang 310,781, and of Malacca 160,886. The crude birth-rate for the year was 30·43, and the crude death-rate 27·80 per mille, the latter being the lowest on record. Deaths from pneumonia were 1710 and from influenza 162. Beri-beri accounted for 904 deaths, as against 1388 and 1299 in 1922 and 1921 respectively. Malaria and tuberculosis were responsible for 3430 and 2683 deaths respectively, fever unclassified for 3064, dysentery for 839, and diarrhœa for 411. There were 18 deaths from cerebro-spinal meningitis, 58 from plague, and 3 from small-pox, but none from cholera. The prevalence of venereal disease in Singapore has given cause for grave anxiety, and a small committee was appointed to consider and report on the question. The report, which was presented in July, disclosed a very disquieting state of affairs, and measures to remedy this are receiving the careful and anxious consideration of Government. The climate of the Settlements varies but little during the year. The mean temperature in Singapore for 1923 was 80·80° F.; in Penang 81·9°; and in Malacca 82·00°. There are no well-marked rainy and dry seasons, the rainfall being pretty equally distributed throughout the year.

THE LATE DR. OSCAR JENNINGS.

IT is impossible to get ahead of a catchy statement once it has become widely circulated; we still receive communications referring to a dictum of the late Dr. Oscar Jennings that every fourth doctor is a drug habitué. Oscar Jennings was a clever and eccentric man who lived most of his professional life in New Zealand and Paris, though he died at Ramsgate just after the opening of the war. This accounts for the absence of his name from the Medical Register to-day, which has been noted critically in some of the commentaries upon his words. His statement was, of course, absolute rubbish, but, looking at the connexion in which it was made, it is probable that he, obsessed though he was with the prevalence of morphinism, did not say what he meant to say. In his clientèle in Paris there was a very large proportion of medical men, some neurologists, and most of those interested in occult sciences and folk-lore. Hence it was generally assumed, at the time when he wrote his frequently quoted words, that he was making a thoughtless deduction from the entries in his case-book at a particular moment, when he was struck by the high percentage of medical men among those consulting him as drug addicts. Dr. Jennings's general conclusions on morphinism were not taken altogether seriously though his clinical experience was large, nor was he a scientific neurologist, although he translated into French certain neurological classics and was medical electrician in a Paris hospital. His wide acquaintance in Paris was largely due to his interesting personality, and especially to his energy in recommending the use of the bicycle and tricycle to both sexes as the readiest method of obtaining hygienic exercise at a time, nearly 40 years ago, when cycling was not a part of the daily life of a large proportion of the population.

A REGRETTABLE INEXACTITUDE.

To the Editor of THE LANCET.

SIR,—As a member of the London Panel Committee, I hope you will forgive me for protesting, with such restraint of my indignation as I can effect, against the gross inexactitude, and resulting libel, embodied in your principal leading article of April 4th. In the course of that article, rightly criticising the high-handed activity of the Ministry of Health, you—not once, but five times—accuse the Panel Committee for the County of London of having formulated an unjustified charge against one of their fellow practitioners, and as having been rightly condemned therefor by the Inquiry Committee set up to consider the case. The number of the references negatives one's first assumption that a slip of the pen explained the libel. One is therefore driven to the conclusion that the writing of this article was deputed to a member of your staff so unfamiliar with the various statutory bodies concerned with the regulation of medical practice as to be unaware that the Panel Committee and the Insurance Committee for the County of London are two distinct entities, of utterly different composition and utterly differing functions. Needless to say, it is the latter body that alone was concerned in this unfortunate prosecution.

I trust you will—as I am sure you will—give to this correction the same publicity that you gave to the regrettable mis-statement complained of.

I am, Sir, yours faithfully,
63, Harford-street, E., April 8th, 1925. HARRY ROBERTS.

*** The cases referred to in our article have been brought by the Insurance Acts Committee to the notice of the Royal Commission on National Health Insurance, and further comment would be unprofitable at this stage. The Insurance Committee for the County of London was the body which made the representations to the Ministry of Health, when the Inquiry Committee was appointed for an investigation of the circumstances, as stated in our leading article. Dr. Roberts is wrong in assuming that a slip of the pen does not account for a description of the situation which must have been perfectly clear to most of our readers. It should have been explained that the connexion of the Panel Committee could be only slight, through members of that Committee finding a place on the Medical Service Subcommittee of the Insurance Committee. We are sorry to have to endorse Dr. Roberts's title that we have committed "a regrettable inexactitude," but when he uses the word libel, we cannot see that any individuals have been accused of anything wrong; the whole purpose of the article was to show that a situation had arisen that merited Departmental attention.

The following is a paragraph additional to the Memorandum of Evidence to be submitted by the British Medical Association to the Royal Commission; a digest of the Memorandum will be found in our issue of Jan. 10th, p. 95.

"There have recently been a number of cases in which the action of the Ministry of Health in imposing penalties on practitioners has appeared to the Association to be of an inexplicable character, and has given rise in the minds of many practitioners to a feeling of injustice, or even of a suspicion of vindictiveness. The Association recognises the administrative duties of the Ministry in this connexion, and is very anxious to foster in the profession a feeling of confidence in the exercise by the Ministry of its judicial or quasi-judicial functions associated therewith. When, however, agreements with the profession have been reached with regard to the machinery and procedure by which decisions shall be arrived at, it is exceedingly disquieting to find that, though the machinery is used and the procedure followed, there are cases in which there seems little or no relationship between the decisions of the Ministry and the reports or recommendations of the bodies on which action is supposed to depend."—ED. L.

A DANGEROUS DEVICE.

A CORRESPONDENT sends us a specimen of a sponge cut into the shape of a cylinder with rounded ends, approximately 2½ in. long and ¾ in. in diameter, which is designed for insertion into the vagina during menstruation, as a substitute for the use of a sanitary towel. It is enclosed in a net and one end is covered by a rubber cap. The instructions for use include a "note for unmarried women", wherein they are informed "when the presence of the hymen is probable, the insertion of a sponge should not be attempted except under qualified advice." The disadvantages and dangers of this device will be apparent to our readers and we call attention to it only because the (unsupported) statement is made that it has been approved by doctors.

CHRONIC ULCERATIVE STOMATITIS.

To the Editor of THE LANCET.

SIR,—May I, through the medium of your columns, seek the experience of others in the prevention of chronic ulcerative stomatitis. My patient, a moderately active young man of temperate habits, has been the victim of ulcers of his tongue, cheeks, and gums during the past five years. He had attacks of indigestion formerly, but has been free from these now for some considerable time. The ulcers continue to appear one, to three, or four, at a time for a period of several weeks; he is then free for a while, only for another crop to appear later. The patient keeps to a wholesome but not a strict dietary, and although the ulcers disappear rapidly under applications of sanitas, potassium chlorate, and silver nitrate, I am unable to prevent their recurrence.

I am, Sir, yours faithfully,
Herne Hill, S.E., April 7th, 1925. GUY MEADOWS.

ROYAL VICTORIA HOSPITAL, BELFAST: ANNUAL REPORT.

THE annual report for 1924 showed a large increase in the volume of work in all departments. The financial statement showed an income of £53,914 and an expenditure of £51,424. The subscriptions from the working classes, which are one of the principal sources of income of the hospital, were fully maintained in spite of the existing industrial depression, and amounted to £20,000. The new dental department continues to grow and there are now 25 dental students. Details are given regarding the extensions of the hospital now in course of erection. These will include 80 additional beds, a new block for nurses, additions to the out-patient departments, larger accommodation for the eye, ear, and throat department, the venereal department, the dental department, and the X ray department, three new operating theatres, and a new mortuary. These extensions have been in progress for nearly two years, and it is expected that they will be completed in a few months. They will make a substantial addition to the resources of the hospital, the pressure upon whose accommodation is severe and always steadily increasing. The waiting-list exceeds 300. The total cost of these extensions is estimated at £120,000.

Croonian Lectures

ON THE

RÔLE OF FATS IN VITAL PHENOMENA.

By J. B. LEATHES, F.R.C.P. Lond., F.R.S.,
PROFESSOR OF PHYSIOLOGY, UNIVERSITY OF SHEFFIELD.

LECTURE II.*

The attempts to make intelligible the rôle of fats in the life of the cell which I tried to review in Lecture I. fail to satisfy the needs, and we have to search for further knowledge of the physical behaviour of fatty substances insoluble in water before we can form ideas that approach the truth. How near we may hope to get with available data we can only determine after taking count of certain facts that have not yet been generally incorporated in the scheme of biological studies.

Orientation of Molecules in Surface Films.

The most important and most promising group of facts bearing on the behaviour of fatty substances in the presence of water is that which points to the orientation of molecules in a surface. It may often be convenient for the sake of argument to consider molecules as if they were spherical, but the whole of chemistry is built upon theories of the disposition in space of the parts of a molecule in relation to one another, theories which receive confirmation from so many sides that they must in the main correspond to the truth, so that to suppose that molecules really are spherical amounts to ignoring most of what chemistry has taught. Molecules can neither be spherical, nor can all parts of them be indistinguishable from each other.

And though it may not be possible to say positively what the shape and pattern in space of many or even with certainty any molecules may be, it is quite certain that a molecule of palmitic acid is not spherical, and must be of an elongated form with at one end characteristics that are entirely different from those at the other end. It is equally certain that protein molecules are not spherical, but while no one can yet present a picture of the spatial pattern of a protein molecule, or follow into three dimensions the intricacies of its stereochemical structure—the very thought of it induces giddiness—the plan of the structure of a simple fatty acid like palmitic acid is necessarily simple, elongated, and with two distinguishable ends.

That the parts of which a molecule is composed determine the position also which it assumes in relation to other molecules of the same kind in crystals has been proved by the measurements of X ray spectra by Bragg; each atom in a crystal takes up a definite position in space in relation not only to the other atoms of the same molecule, but to those of the molecules in its neighbourhood. Harkins[1] and Langmuir[2] have pointed to a similar conclusion that in the surface presented by one liquid to another with which it is immiscible there may tend to be an ordered juxtaposition of the molecules so that some one and the same particular part of each molecule of the same kind is directed towards the mass of molecules of the other kind. This is merely a part of the ideas they have brought forward, but it is the part with which we are immediately concerned.

Measurements Obtained by Observation of Films.

There are some beautiful measurements that afford the strongest proof of this conception in the work of N. K. Adam.[3] He has improved upon the methods employed by Langmuir, and learnt much from the still earlier work of Hardy. He measures the area occupied by a film composed of a fatty acid, an ester of a fatty acid, or some other derivative containing the long hydrocarbon chain, spread out on a water surface. The water is contained in a metal trough, the edges of which have been painted with paraffin wax, so that the water will not creep over them; and the surface of the water is cleaned so as to remove all contaminating foreign matter by sweeping across it a similarly paraffined bar of glass. On to the freshly cleaned surface a known weight, three or four small drops, of a dilute solution of the fatty acid in benzene is placed. The benzene evaporates, leaving a known number of molecules of the fatty acid on the surface, occupying an area that can be measured by pushing from one end of the trough a paraffined glass bar until it presses the film against a paraffined float stretching across the other end of the trough. The pressure exerted by the film on this float is detected by the movement of the float, and its amount measured by a balance, one arm of which is acted on by the float, while the other arm carries a pan for weights. Accurately adjusted jets of air prevent the film from being driven through the narrow gaps between the ends of the float and the sides of the trough. In this way the area occupied by the film can be measured, and the compressing force to which it is exposed also.

It is found that the area occupied by the film, when the molecules are packed close by the compressing force, corresponds to an area per molecule of 21 sq. Å (Å = 10^{-8} cm.), this area being the same for all saturated fatty acids that give films, and also, it may be noted, for many other compounds in which a similar chain of carbon atoms is the common feature. From the density of the solid acid in bulk the volume occupied by a molecule of the acid in the solid material can be calculated. Supposing that the molecules in the film are actually as close packed as they are in the solid acid, and occupy, therefore, the same volume, if this volume be divided by the area in the film occupied by the molecule, the third dimension of the molecule is obtained, and in the case of palmitic acid the value for this dimension is nearly 21 Å. The area of 21 sq. Å would be given by a square with sides of 4·7 Å, so that a molecule of palmitic acid in the film would occupy in that case a volume with one dimension about five times as great as the others; the longer dimension is vertical to the water, one end of the molecule being on the surface of the water and the other directed away from it. At one end of the molecule is the acid carboxyl group, at the other the terminal methyl group of the paraffin chain. The end directed to the water must be that at which the carboxyl group is situated, for the reason, among others, that if for this group a methyl group be substituted, so that both ends are alike, neither end adheres to the water. The paraffin hexadecane, which differs from palmitic acid only at this point and in this way, does not form a film, there being no part of the molecule that is capable of binding it to the water; it is paraffin from end to end. The molecules remain heaped up and clinging together.

The same conclusion as to the orientation of molecules in surface films such as these had been arrived at before by Langmuir and by Harkins. The proof given by Adam's measurements for a larger number of substances is complete. It follows from this that substances which are insoluble in water may, nevertheless, not be indifferent to it. A molecule of a fatty acid such as palmitic acid, so far as its hydrocarbon chain is concerned, in regard, that is, to 15 out of the 16 carbon atoms of which it is composed, retains the characteristics of the paraffin hexadecane, which water will not wet. The terminal carbon atom in the carboxyl group has affinities for water which, though not able to overcome this paraffin property as it can in an acid with a shorter paraffin chain, in some measure even in one containing as many as 12 carbon atoms in all, is nevertheless able to exert a profound influence on the behaviour of the molecule in relation to water. Such molecules might be compared to the quills used for floats in fishing which have one end weighted. With quills of the same thickness, but different lengths, it would be found on attaching a certain weight to one end, the same weight to all, that those of less than a certain length would be totally immersed in the water, those of more than that length would float vertically on its surface; whereas the same quills without the weights would all alike float lying horizontally on it. Paraffins are all immiscible with and lighter than water; the acids derived from them have with increasing length of hydrocarbon chain diminishing solubility, but still sum up to the one with 12 carbon atoms; those of higher molecular weight than this are not in any degree soluble; they float in a vertical position on the surface held upright by a force exerted on the carboxyl group by the water molecules.

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* Lecture I. appeared in The Lancet last week. Lectures III. and IV. will appear in subsequent issues.

The simile obviously cannot be pressed. For one thing, the fatty acid molecules are in consequence of strong attractions exerted by the paraffin chains on each other made to cohere to one another; and for another, they must be supposed to be in a state of kinetic activity, varying in amplitude according to whether the film resembles a solid, liquid, or gas. This molecular agitation, however, is not able to disturb the influences which determine what might be called their posture, the force acting between the water and one end of the molecule on the one hand, and that acting between the rest of the molecule and the corresponding parts of its neighbours, which, like it, are paraffin and incapable of affinity to water or anything aqueous.

The forces exerted by the paraffin chains on each other cause the molecules to cohere in continuity; the forces exerted by the water on the carboxyl group cause the molecules to spread on the surface, and limits their continuity to one in two dimensions, in the sense that the film formed is one molecule thick, with that part of each which the water can bind adherent to the water, and that part directed away from the water which the water will not wet. In a paraffin such as hexadecane there is no part of the molecule which the water can wet, and consequently the molecules cohere in three dimensions, not only in two; no film is formed, and the paraffin does not spread over the water.

CHEMICAL PROPERTIES IN RELATION TO PHYSICAL BEHAVIOUR.

There is here a point in the behaviour of fatty acids and their esters that has hitherto not been taken into account by cytologists. Chemical properties are significant not only because of the chemical reactions which they make possible, but also because they determine the positions taken up by molecules in relation to one another, their physical behaviour. Oil does not mix with water, nor does any chemical reaction take place between them on any detectable scale at the ordinary temperature. But there are conditions in which the molecules of oil in contact with water are proved to range up in a definite formation. This ordered juxtaposition of molecules at an interface cannot be overlooked in the attempt to arrive at some intelligible conception of the structural relationships of the components of cell substance.

Another point that Adam has brought out is this: the physical properties of film-forming substances are quite different in the films from those that the same substances exhibit in bulk. Palmitic acid in bulk is a solid up to the temperature of 62·6° C.; in a film on water, if the pH is 5 or less it is liquid at the ordinary temperature of the air. The solidity or fluidity of the film in these experiments is judged by the behaviour of motes floating in it. When the film is solid these are stationary; when it is fluid they move about continually in any direction. A sufficient compressing force can cause a film of palmitic acid to solidify at the room temperature; a force, for instance, of the order of 30 atmospheres may do so, though this does not always occur, and the conditions determining the change have not been exactly defined. Liquid films are similarly obtained with other substances at temperatures far below their melting-point. Moreover, at a certain temperature, in the case of palmitic acid between about 20° and 32°, the compression remaining the same, the film undergoes a change which results in its area being increased by as much as 60 or 70 per cent., and then with a further rise of temperature expanding gradually and uniformly at a much slower rate. Other acids in the same series of lower molecular weight, though still insoluble, give films that are expanded at the ordinary temperature, as does also oleic acid, which even in bulk is of course liquid at still lower temperatures. Such expanded films behave, therefore, in many respects as if they were in a gaseous state.

The physical properties, then, of film-forming substances are quite different in the films from those that the same substances exhibit in bulk. Palmitic acid, which in bulk melts near 63° C. in the film, is liquid at the room temperature, and passes, by a transition reminding one of the passage of a liquid into a gas, into a condition more like that of a gas than a liquid at a temperature 30° below its true melting point. To account for these extraordinary phenomena there would appear to be two conditions that obtain in the film, and not when the substance is in bulk. In the first place molecules are in a single layer, there are no other molecules of their own kind beyond the surface film, no other paraffin chains to enhance the cohesive forces that their own paraffin chains exert on each other. If there were, the resultant of their attractions would act as a force at right angles to the surface and directed upwards from it, which would steady them and impede the freedom of their movements. Without this they are as boats without ballast, much more sensitive to the buffeting to which they are exposed. And then, secondly, in the film they are engaged at one end by the water; so far as that end is concerned it is soluble in the water, it shares so freely in the agitation of the water molecules under kinetic activity that the whole molecule is thrown into a state of kinetic agitation which it would not experience otherwise till its temperature had risen much higher than that observed in its environment. Liquefaction and vaporisation are incident to degrees of kinetic activity. When a solid substance liquefies we say its temperature has risen; it has really shared in the rise of temperature of its environment; and that means merely that kinetic activity has been imparted to it. Some of the kinetic activity necessary to make a monomolecular film of palmitic acid liquefy is not derived from the temperature of its surroundings, but appears to be due to the fact that the carboxyl group is in a sense soluble in the water.

When a substance passes from the liquid state to the gaseous state the distance between the molecules is greatly increased, far more even than the remarkable increase in the distance between the molecules in a film when it passes from the condensed to the expanded state. In an expanded film matter can be observed and studied in a state different from any state in which matter has previously been studied. It may be just to speak and think of it as a gas in two dimensions instead of three. But there is the difficulty about the distance between the molecules, and in any case it is hard to conceive of a gas confined in this way with its molecules moored to the water surface like captive balloons. Perhaps something similar exists in a film of adsorbed gas, where the molecules are known to be much closer together than those of the gas free in three dimensions.

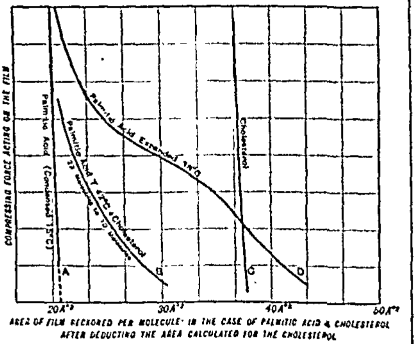
If the substances which are concerned in the formation of the lipoid membrane behave similarly in the surfaces where their molecules, characterised by the long paraffin chains of fatty acid radicals, are confronted by the aqueous solutions of the cell, it is clear that the physical conceptions that cytologists bring to the study of cells must be amplified.

BEHAVIOUR OF LIPOIDS IN SURFACE FILMS.

With Mr. Adam's help I have employed his methods for studying the behaviour of some of these substances in thin films on water. Two preparations of lecithine made by Levene's method from egg yolk, and a valuable preparation made and analysed at the Rockefeller Institute which Dr. Levene was so good as to give me, were found to form films on water which had, speaking generally, the same characteristics as those found by

Adam for the fatty acids and many other substances which he examined. The area occupied by a fatty acid chain, whether in a molecule of fatty acid or of its ethyl ester or triglyceride, is in a condensed film 21 sq. Å (Fig. 1, A). In an expanded film of palmitic acid, under a certain standard compression, this area is 42 or more according to the temperature (Fig. 1, D). At room temperature the area occupied by each of the two fatty acid chains in lecithine was 51 and 58 in the case of my two preparations, and 50·6 (Fig. 2, D) in that of Levene's lecithine proved by analysis to be pure, and at the lowest temperature at which it was measured, 4·5° C., 52·6. The curve of diminishing area with increasing compression traced up to a compressing force of about 60 atmospheres, even at this temperature, showed no signs of the film condensing. It is not possible, therefore, under the conditions of these experiments, to obtain a film of lecithine in a state in which the fatty acid chains are packed close together. The figures seem to indicate, as might be expected, that the glyceryl cholyl phosphoric acid, which links the two fatty acid chains in lecithine, occupies a considerably greater space than the two carboxyls of two fatty acid molecules, prevents the two paraffin chains from coming as close as they otherwise would, and so diminishes the cohesive force that these chains exert upon each other.

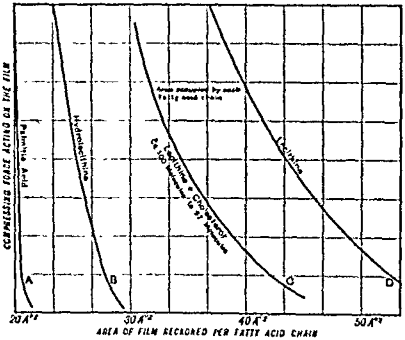
FIG 1.



A preparation of pure hydro-lecithine, which also I owe to Dr. Levene's generosity, was found to give not an expanded film but a condensed one; in this, at the standard compression, the area occupied by each fatty acid chain was 28 (Fig. 2, B), and even under the very high compression that films of this substance withstand of the order of 200 atmospheres, the area was barely as small as that for the same chain in a fatty acid molecule in a film on water at a *fortieth* of this compression. It is safe to say, then, that the large polar group in lecithine prevents close packing of the fatty chains, and so diminishes the tenacity with which these chains will cohere to each other, at the same time widening the intervals between them through which foreign molecules may pass. For, incidentally it may be said, molecules do pass between the paraffin chains even of a condensed fatty acid film. Through such a film water was shown to evaporate with a considerable velocity. An expanded film must give greater facilities for this to occur, and a lecithine film still more.

The behaviour of cholesterol and its esters was also studied in this way. Seeing that the chemical constitution of cholesterol is still not yet determined in all particulars, the measurements cannot furnish as clear a picture of the structure of the film. Cholesterol prepared with every precaution from gall-stones, re-crystallised several times, faultless in appearance, and with the correct melting-point, was heated to remove water of crystallisation, several solutions were made, and many films of each measured. The mean area occupied by the molecule at the standard compression force was 38·3 sq. Å (Fig. 1, C). The compressibility is small, as under 20 times this compression force the area was reduced only about 3 per cent. This suggests that the molecules must be almost as closely packed in the film as in the substance in bulk; but since the successive layers in that condition might interlock with each other, it is not possible to assume that the specific gravity of the substance in a mono-molecular film is the same as that which it has in bulk. If, however, it is, the third dimension of the molecule, the thickness of the film, was 16 Å, and the compression force required to reduce its area by 3 per cent. was about 170 atmospheres; the vertical length of the molecule would be a little less than three times its breadth. Its molecular area seems to be the same on dilute acids as it is on water.

FIG. 2.



Cholesterol is no more soluble in water than the higher fatty acids, and it is not without interest that it should form films like these, though with the imperfect knowledge that we have of its chemical constitution it is impossible to say what the grouping is that binds it to the water surface until some of the derivatives that can be made from it have been studied. Certain peculiarities observed in its own behaviour also need further investigation, and may prove of interest.

Cholesteryl palmitate, made from it with palmityl chloride, appears not to give a real film. The area covered by one solution at standard compression varied considerably from 18·6 to 22·7 per molecule, and averaged 20·3; with another solution it averaged 19·0, but the film was visibly solid and not uniform; the molecular area indicated by the measurements appear impossibly small. The only thing to be learnt from this is that the esterification of cholesterol with palmitic acid prevents both these substances from behaving in their characteristic way, and this fact points to the alcoholic hydroxyl in cholesterol as being the group which fixes it to the water. Other esters of cholesterol have not yet been studied.

INFLUENCE OF CHOLESTEROL ON BEHAVIOUR OF LECITHINE IN FILMS.

But in view of many facts with regard to the physiological influence of cholesterol in modifying the behaviour of lecithine, it was interesting to study the effect that cholesterol had on films of lecithine when the solution used for making the film contained both substances. And also it was interesting to see whether cholesterol had any effect on simple fatty acids under such conditions. The method used was to prepare solutions containing the fatty acids and cholesterol, both of course in known suitable amounts, and after measuring the area of the films under different compression forces to reckon what part of this area would be accounted for by the amount of cholesterol put on, deduct this amount from the area of the film, and compare the area left for each molecule of fatty acid to occupy with that which it would have occupied had the cholesterol not been present. In a word, in every case there was recognisable a tendency for this area to be diminished. Even with palmitic acid at ordinary temperature on dilute acid, when, as Adam has shown, the carboxyl groups appear to be in contact, but not the paraffin chains, until the compressing force reaches more than a certain value, the fatty acid molecules in the presence of cholesterol are closer together than they otherwise would be at these lower pressures. With acids that give expanded films, tridecylic acid at the room temperature and palmitic at temperatures between 31 and 40, for instance (Fig. 1, B and D), the effect is much more striking, the area being reduced, though the effect is not so pronounced as it is with expanded fatty acid films.

This effect, the extent of which the curves shown will make clear, is difficult, of course, to interpret, so long as the chemical constitution of cholesterol remains obscure; but the fact that it is observed with fatty acids even more than with lecithine, though still observable with this (Fig. 2, C and D), tempts one to suppose that the action is between the cholesterol and the paraffin chains rather than the complex glyceryl cholyl phosphoric acid, and therefore is again a change in physical behaviour, an alteration in the force of cohesion between these chains, that depends upon chemical characteristics not capable of resulting in actual chemical union in the ordinary sense.

These are the points that this method of investigating these substances has so far brought out. There is obviously much need for further investigation in order to get the definition clear, and it is to me at least obvious that the work which Adam is doing is on the very foundations of physiology, though not of physiology alone.

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Hunterian Lecture

ON

REGIONAL ANÆSTHESIA.

Delivered at the Royal College of Surgeons of England on Feb. 13th, 1925,

BY STANFORD CADE, F.R.C.S. ENG.,
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(and from the Physiological Laboratory, King's College).

WITH regional anæsthesia is added to the armamentarium of the surgeon a new weapon by means of which the safety and comfort of the patient are appreciably increased. As the method is based solely upon accurate anatomical knowledge and sound interpretation of physiological phenomena it is perhaps not unworthy to associate this lecture with Hunter's name.

Definition.—By regional anæsthesia is meant abolition of sensation of pain in a definite part of the body by the action of a non-volatile anæsthetic solution introduced in the neighbourhood of the nerves supplying that part.

HISTORY.

The method was originated by Hugo Sellheim[1] in his experimental work on abdominal surgery. It was first published in 1905. Six years later, in 1911, Lawen[2] injected the posterior roots from the ninth dorsal to the third lumbar for a nephrectomy in an old and debilitated patient suffering from emphysema, chronic bronchitis, and arterio-sclerosis. He was the first to introduce the term conduction paravertebral anæsthesia. In 1912 Finsterer, who took up this method, published his results,[3] and a little later Kappis [4] [5]; the latter, after employing the method during a period of ten years, reported in 1922 80 operations on the kidney by this method. By 1916 Ziegel,[6] who extended regional anæsthesia to abdominal as well as renal operations, published a report of 600 cases. By 1919 he had performed 2000 operations under paravertebral conduction anæsthesia.[7] Others followed, in Germany, Braun and Hartel,[8] who called attention to some important points. In France Pauchet,[9] with the assistance of Labat, Sourdat, Laboure, and Laborde, extended the method to all regions of the body. In 1917 Wendling[10] in Thèse de Basle described a method of infiltrating the solar plexus with an anæsthetic solution. This extended the use of regional anæsthesia from the peripheral to the sympathetic nervous system. The method of anæsthetising the solar plexus described by Wendling, the anterior route, was elaborated by Kappis and by Naegeli,[11] who in 1919 published 18 cases. In 1920 Labat[12] described the method of inducing splanchnic analgesia by the posterior route. In America, Allen, Labat,[13] Lawsley and Pugh[14] popularised the method. In this country Mr. O. S. Hillman and Dr. R. E. Apperly reported three months ago 48 and 43 cases of splanchnic analgesia.[15] As it is employed to-day, regional anæsthesia comprises the infiltration of peripheral nerves either at their exit from the intervertebral foramina or more distally, combined, in the cases of abdominal surgery, with the anæsthetisation of the splanchnic nerves and the semilunar ganglia.

DRUGS.

The anæsthetic employed is novocaine. It is six to ten times less toxic than cocaine. In the strength of ½ per cent. solution large quantities can be given with safety if certain precautions are taken. As its melting-point is 156° C. it can be sterilised in an autoclave. It is soluble in water and saline solutions. To avoid all possibility of overdose, 1·5 g. of novocaine powder, sterilised in a sealed glass ampoule, are dissolved in 300 c.cm. of sterile normal saline. The toxicity is so low that the whole amount can be safely given to one patient. It produces no local irritation or infiltration and so is absorbed painlessly. The Board of Trustees of the American Medical Association, in their report[16] on an extensive survey to study the occurrence of accidents arising out of the use of local anæsthetics, quote only one death due to novocaine. The use of adrenalin is not advisable, neither is it necessary. The injections should be in the vicinity of a nerve, not endoneural. If a nerve is bathed in a solution of novocaine the inevitable result is anæsthesia. The anæsthesia lasts two hours or more. Anæsthesia to pain is complete, touch is not entirely abolished, pressure sense is not lost, and this must be explained to the patient, as otherwise the sensation of pressure may be interpreted as pain. Motor power is not affected, but voluntary movements are irregular and weak owing to sensory disturbance and loss of muscular tone; this latter is a great advantage as it produces excellent relaxation, unsurpassed by that obtained by the deepest narcosis anæsthesia. The preliminary use of narcotics is useful in most patients. Morphine and scopolamine in the usual doses are given half an hour before the induction of anæsthesia, and can be repeated before the operation is commenced.

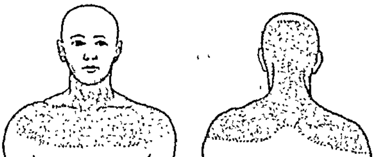
INSTRUMENTS.

The syringe employed is of the record pattern, has a glass barrel of 22 c.cm. capacity, graduated up to 20 c.cm., so leaving a space for preliminary aspiration. Aspiration is absolutely essential, as intravenous injection of novocaine will produce cessation of respiration; this is instantaneous and may last several hours and may kill the patient. Needles of various length are used, the smallest for the formation of dermal wheals, so rendering further punctures painless. Paravertebral anæsthesia can be divided in three groups: cervical, dorsal, and lumbar.

CERVICAL PARAVERTEBRAL ANÆSTHESIA.

The sensory nerve-supply to the neck is derived from the second, third, and fourth cervical nerves, mostly from the anterior primary divisions. Each nerve, after emerging from the intervertebral foramen, is joined by a grey ramus communicans from the superior cervical sympathetic ganglion, and divides at the tip of the transverse process so as to form three loops of the cervical plexus lying under cover of the sterno-mastoid muscle. From these loops branches of distribution arise. The cutaneous branches form the sensory supply to the head, neck, and shoulders. The nerves concerned are six in number. They appear at the posterior border of the sterno-mastoid muscle: two are distributed upwards, the great auricular and the small occipital; one runs forwards, the transverse cervical; and three pursue a downward course, the three descending cervical nerves. Of the posterior primary division the second cervical gives off the great occipital nerve, which forms the chief cutaneous supply of the back part of the scalp. Hence by blocking the second, third, and fourth cervical nerves close to the intervertebral foramina an extensive area of anæsthesia is obtained, extending in front from the margin of the lower jaw to the level of the nipples and behind from the occipital area to the shoulders. (Fig. 1.)

FIG. 1.



Area of anæsthesia after bilateral cervical paravertebral block (C_2, C_3, C_4).

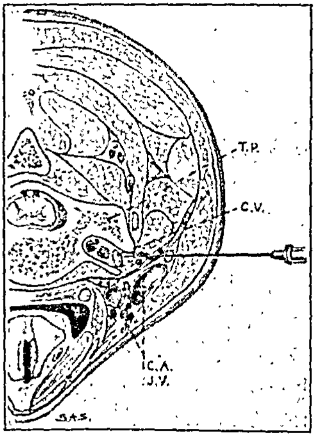
Cutaneous anæsthesia is complete, and manipulation of the blood-vessels, lymphatic glands, muscles, fasciæ, and the thyroid gland is painless.

Technique.—The nearest and safest approach to the second, third, and fourth cervical nerves is from the lateral aspect of the neck. The transverse processes of the cervical vertebræ are identified by palpation and the following points used as landmarks: The upper border of the thyroid cartilage is at the level of the transverse process of the fifth cervical vertebra; one finger's breadth below the tip of the mastoid process marks the level of the transverse process of the third cervical vertebra; this corresponds to the angle of the jaw. The head is turned to the opposite side and these two points marked by raising two cutaneous wheals. The vascular bundle is displaced inwards and a needle 6 cm. long inserted transversely through each wheal till the desired transverse process is reached (Fig. 2). After preliminary aspiration 5 c.cm. of 1 per cent. novocaine is injected for each nerve. The third and fourth nerves are injected through the lower wheal, the second through the upper one. In a short neck one wheal can serve for all three nerves. Twenty c.cm. of ½ per cent. solution is next distributed along the posterior margin of the sterno-mastoid muscle. *Anæsthesia is established at once and lasts for two hours.* Bilateral cervical block can be induced with ⅛ g. of novocaine. Paresis of the diaphragm, even if it occurs, is harmless. The most extensive operations in the neck have been performed under cervical paravertebral anæsthesia.

DORSAL PARAVERTEBRAL ANÆSTHESIA.

The induction of the dorsal paravertebral anæsthesia is the most delicate of all regional methods. It requires constant practice, and to be successful the relation of the nerves to the surrounding bony structures must be visualised. Each nerve is formed in the neighbourhood of the intervertebral foramen by the junction of the anterior and posterior roots and at once divides into an anterior and posterior primary divisions; from the anterior primary division of all the dorsal nerves with the exception of the first two, a series of fine nerves arise connecting these somatic nerves with the sympathetic system. These visceral, splanchnic, or white rami communicantes innervate through the sympathetic trunk the viscera and vessels of the splanchnic area. In making paravertebral injections the object is to bathe the nerves at their point of division and produce anæsthesia in the zone supplied by both the primary divisions and the sympathetic twig. After emerging from the intervertebral foramen each nerve lies between adjacent transverse processes and runs in the intercostal space towards the angle of the rib above; it is accompanied by an artery and vein. In this space extending from the tubercle of the rib to the costal angle the nerve lies between the external intercostal muscle and the internal intercostal membrane, which alone separates the nerve from the pleura and lung. Continuing its course in the intercostal space each nerve travels around the thorax, giving off a lateral cutaneous branch in the midaxillary line and an anterior cutaneous branch in front. The upper nerves supply the chest wall; the lower the integument of the abdomen and part of the back.

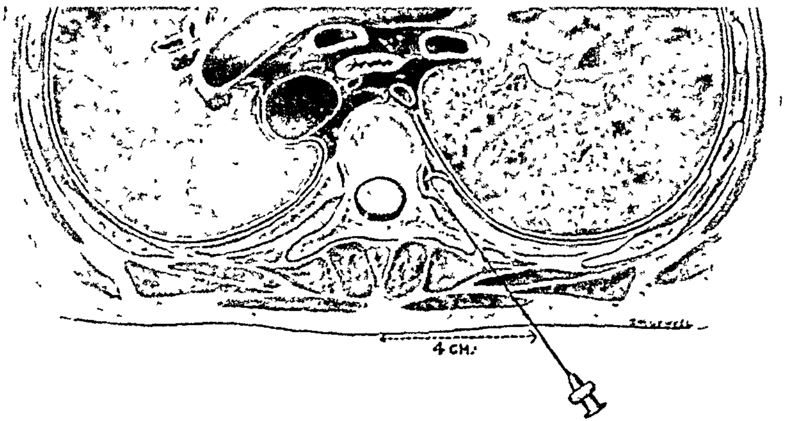
FIG. 2.



Transverse section of neck: level of fourth cervical vertebra, showing needle in position. T.P., transverse process; C.V., cervical nerve; C.A., carotid artery; J.V., jugular vein.

Technique.—With the patient lying on the opposite side, the back arched, and a pillow under the loin, the twelfth spinous process is identified in the following way: A perpendicular drawn from the last rib at a distance of 5 cm. from the mid-line passes through the transverse process of the twelfth dorsal vertebra; an alternative way is to count upwards from the fifth lumbar transverse process. At a distance of 4 cm. from the mid-line dermal wheals are raised opposite the transverse processes at the desired level. A needle 9 cm. long is inserted through the wheal and inclined outwards to an angle of 45° with the sagittal plane of the body. The needle is directed forwards and inwards and contact is made with upper and lower transverse processes in turn, the needle is then passed forwards and inwards between the two transverse processes and anterior to the lamina till it impinges on the side of the vertebral body immediately in front of the inter-vertebral foramen (Fig. 3). After preliminary aspiration 5 c.cm. of 1 per cent. novocaine is injected. If during the progress of the needle paræsthesia is established the injection is made at once. As many nerves as necessary are injected and the field tested with a sharp needle; if a band of normal sensation is found the particular area is injected again. Puncture of the pleura is painless, but injection in the pleural cavity gives rise to coughing, and, of course, no anæsthesia is established. Puncture and injection of the lung give rise to pain and coughing. The upper dorsal paravertebral block is indicated for operations on the chest, and in conjunction with the brachial plexus block for operations on the upper limb, the axilla, and for radical amputation of the breast. The lower paravertebral (seventh to twelfth) can be used for upper abdominal operations (Fig. 4), but, as will be explained later, it is not the method of choice.

FIG. 3.



Transverse section at level of fifth to sixth dorsal vertebra (Specimen No. 252B, Roy. Coll. Surg. Mus.), showing needle in position.

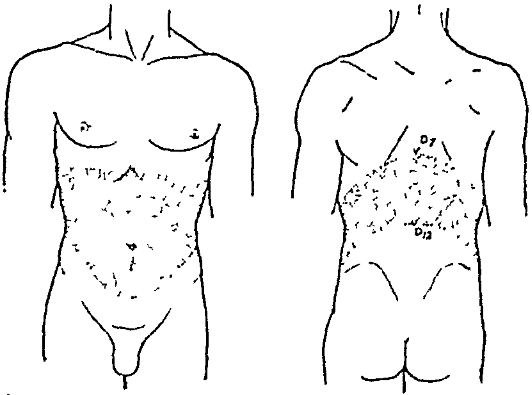
LUMBAR PARAVERTEBRAL.

The lumbar plexus is situated in the substance of the psoas muscle; the four upper lumbar nerves which contribute to its formation, after emerging from the intervertebral foramina course slightly downwards and lie in close relationship with transverse processes; the first lumbar nerve in front of the second lumbar transverse process, and so on. The branches of the plexus are: The ilio-hypogastric and ilio-inguinal from the first, the genito-crural from the first and second, the external cutaneous from the second and third, the anterior crural and obturator from the second, third, and fourth; the remainder of the fourth with the fifth form the lumbo-sacral cord. The cutaneous area supplied by these nerves occupies the lower part of the abdomen and part of the back and the anterior and inner parts of the thigh. The guide to the nerves are the transverse and spinous processes of the lumbar vertebræ. It will be observed that the spinous processes are vertical laminæ about 2 cm. in height and that their upper border corresponds with the transverse processes which are short and directed outwards at right angles to the spinous processes.

Technique.—With the patient lying on the opposite side in the same position as for the induction of dorsal paravertebral, the spinous processes of the lumbar vertebræ are identified by counting from the first or from the fifth. Each spinous process is palpated till its upper border is felt, a wheal is raised at that level 3 cm. from the mid-line. A needle 10 cm. long is introduced through the wheal and directed antero-posteriorly till the transverse process is reached; the needle is then made to pass over the upper border of the transverse process. It is the rule to induce paræsthesia as the nerves are of large size; 8 c.cm. of novocaine is injected around each nerve. To anæsthetise the fifth lumbar nerve, the needle is inserted below the fifth transverse process. Lumbar paravertebral is used in combination with the lower dorsal for operations on the kidney and ureter; anæsthesia is complete and the most difficult renal operations have been done without a general anæsthetic (Fig. 5). It has the advantage of not throwing an additional burden on the opposite kidney.

SPLANCHNIC ANALGESIA.

FIG. 4.

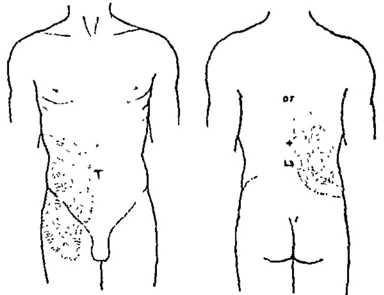


Area of anæsthesia after bilateral paravertebral block from seventh dorsal to twelfth dorsal nerves.

The most interesting and perhaps the most important part of regional anæsthesia is splanchnic analgesia. It is not only a valuable addition to practical surgery but has opened up a field of research. It allows the surgeon to interfere to a more extensive degree in the upper abdomen and robs major abdominal operations of a great deal of their seriousness. The innervation of the abdominal viscera is derived partly from the vagus and partly from the sympathetic. Section of the spinal cord between the fifth and sixth dorsal vertebræ in a dog produces analgesia of the abdominal viscera (Kappis[4 5 13]). Section of the splanchnic nerves produces analgesia of the stomach, liver, gall-bladder, spleen, and small intestine. Section of the spinal nerves supplying the abdominal wall produces parietal anæsthesia only; visceral sensibility remains unaltered (Hoffman[13]). Application of novocaine gives similar results. The viscera, as is well known, are insensitive to cutting or cauterising, but the retroperitoneal tissue is very sensitive especially to pulling. Every surgeon is aware that the lesser sac of peritoneum and the region of the cœliac artery are exceedingly responsive to manipulations. The sympathetic fibres therefore collect and transmit to the cerebro-spinal system through the splanchnic nerves afferent impulses from the viscera. The solar plexus is a mass of considerable size composed of nerve-fibres intermingled with ganglionic cells; it is situated behind the peritoneum at the level of the first lumbar vertebra, in front of the crura of the diaphragm, near the origin of the cœliac axis. It is composed of three parts—the cœliac plexus proper and the two semilunar ganglia—situated close to the suprarenal bodies, the right being overlapped by the inferior vena cava. The plexus is continuous with subordinate plexuses—renal, phrenic, mesenteric, &c. Each semilunar ganglion is joined by the splanchnic nerves. The great splanchnic nerve is derived from the ganglionated thoracic sympathetic chain, and originally from the fifth to ninth dorsal nerves; the small splanchnic comes from the ninth and tenth dorsal nerves. They pierce the crura of the diaphragm and join the semilunar ganglia. Splanchnic analgesia is obtained by bathing with novocaine the retroperitoneal space containing the semilunar ganglia.

Technique.—The patient lies on the side opposite to that of the injection, a pillow under the loin. The site of the injection is found by identifying the twelfth rib and taking on it a point 7 cm. distant from the mid-plane of the body (Fig. 6). In cases where it is difficult to identify the last rib, the injection level is found by determining the spinous process of the first lumbar vertebra. A dermal wheal having been raised on the selected point, a needle 12 cm. long is introduced forwards and inwards at an angle of 35° for a distance of 8 or 9 cm. When the body of the first lumbar vertebra is felt, the needle is withdrawn and reintroduced at a smaller angle till it is felt to glide tangentially along the side of the vertebral body (Fig. 7). If the angle is less than 30° there is danger of transfixing the renal pedicle or the kidney; at an angle of more than 45° the intervertebral foramen may be entered. If no blood is withdrawn on aspiration 60-80 c.cm. of ½ per cent. novocaine is slowly injected. The solution diffuses in the retroperitoneal tissue from the diaphragm downwards along the bodies of the vertebræ. If the solution is coloured with indigo-carmine or methylene-blue, on opening the abdomen, it will be seen infiltrating a wide retroperitoneal area. The procedure is repeated on the opposite side; one dermal wheal and one puncture on each side is sufficient; ¾ g. of novocaine induces good splanchnic analgesia

FIG. 5.

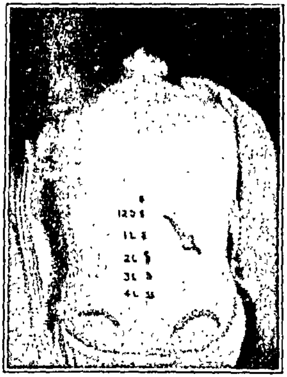


Area of anæsthesia after unilateral paravertebral injections from seventh dorsal to third lumbar nerves; suitable for operations on kidney and ureter.

FIELD BLOCK.

The anæsthetisation of the abdominal wall is obtained by injecting the sheath of the rectus muscle at a suitable level. Wheals are raised on each side of the outer border of the rectus at the level of the ninth costal cartilage and just below the umbilicus. A needle is introduced through each wheal till it is felt to puncture the anterior layer of the rectus sheath; this imparts a characteristic resistance to the needle and serves as a landmark; puncture of the sheath is painful. Half per cent. novocaine is injected into the muscle and deep to it in a fan-shaped manner radiating from the point of puncture; when the injection is carried out carefully the rectus muscle becomes relaxed and the parietal peritoneum insensitive to gentle manipulation. The subcutaneous tissue is next injected along the semilunar line through the same dermal wheals. It must be remembered when this procedure is adopted there remains a lateral zone of unaltered sensation. It is therefore important for the success of the field block that all incisions be made within the anæthetised area with a sharp scalpel and not scissors; retractors must be introduced gently and the edges of the wound separated gradually. If manual exploration is necessary the incision must be of adequate size, to admit the hand easily. The patient is aware that his viscera are being manipulated, but he does not complain of pain. In nervous patients, or for the mental comfort of the surgeon, a first-stage ether anæsthesia for a few minutes is a useful adjunct. The abdominal field block can be varied so as to suit various incisions.

FIG. 6.

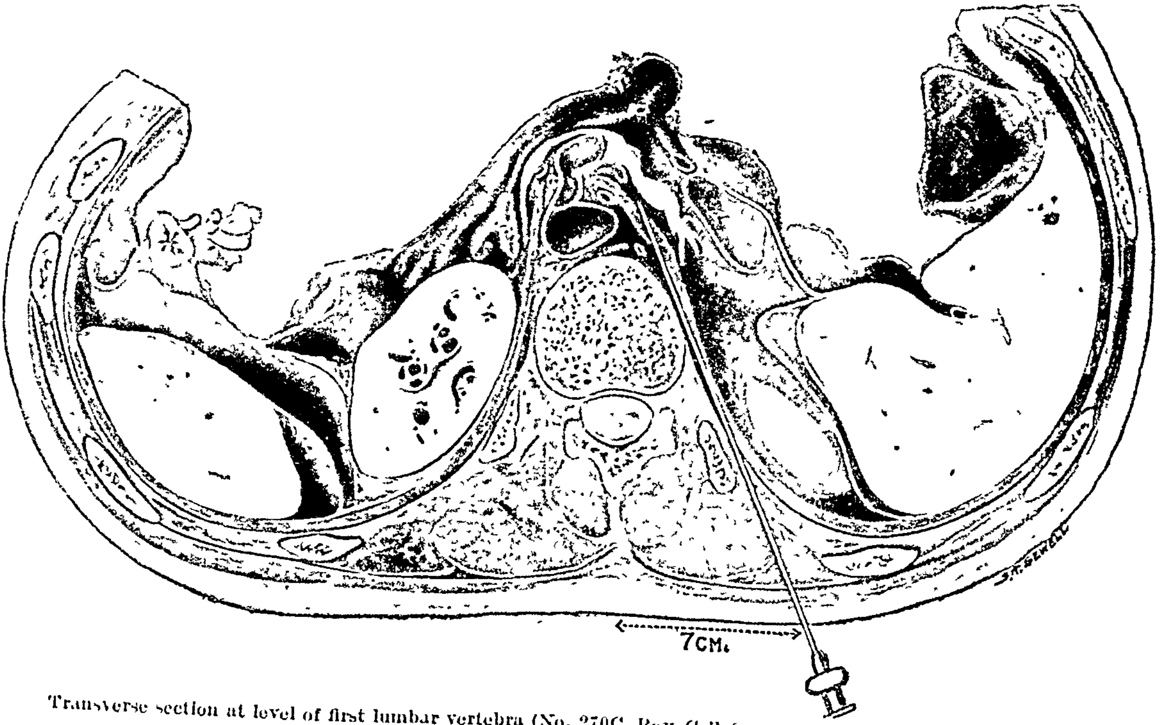


Shows twelfth rib and cutaneous wheal 7 cm. from midplane: point of entry for splanchnic injection.

EXPERIMENTAL EVIDENCE OF REGIONAL ANÆSTHESIA.

To obtain some evidence of the effects of regional anæsthesia experiments were carried out on cats, rabbits, and dogs. The variations of blood pressure were taken as an index, not because it was considered that these were an accurate record of the various degrees of shock, but because it was the most convenient method of obtaining a graphic record. In all cases but two the animals were anæsthetised with ether, and the depth of anæsthesia in most cases was such that the conjunctival reflex was not lost. The blood pressure was recorded by connecting the central end of the carotid artery to a mercury manometer carrying a writing point. The experiments performed included abdominal section, manipulation of various viscera, twisting and dragging of the stomach and intestines, gastrectomy, splenectomy, faradic stimulation of the peritoneum, viscera, splanchnic, and sciatic nerves. All the experiments were first performed under the influence of ether alone and then repeated after a local, regional, or splanchnic infiltration with $\frac{1}{2}$ per cent. novocaine. Each addition of ether on the mask produced a slight fall of blood pressure. Manipulations of viscera produced a rise of blood pressure. To obtain a fall more violent manipulations had to be done. In rabbits a fall was more easily obtained. The viscera were kept moist and warm throughout the experiment, and inside the abdominal cavity most of the time. Exposure to air of a viscus rapidly produced loss of response to stimulation. The results were similar to those obtained by Prof. Pannett[17] in his experiments on anoci-association in 1911. Splanchnic anaesthesia was more effective than local applications. The experiments showed that, whilst under general anaesthesia, manipulations of the viscera produce alterations in the blood pressure, similar manipulations under regional anæsthesia had hardly any or no effect. Regional anaesthesia therefore blocks the paths of afferent impulses from the viscera and protects the medullary centres, in particular the vasomotor centre (Fig. 8).

FIG. 7.



Transverse section at level of first lumbar vertebra (No. 270C, Roy. Coll. Surg. Mus.), showing needle in position, perforating diaphragm posterior to right semilunar ganglion.

Further, histamine is a normal constituent of the intestinal contents and the toxæmia of intestinal obstruction is at least partly due to its absorption, and it has been shown that the etherisation of an animal makes it more sensitive to the effect of histamine. In practice it was found that splanchnic anæsthesia offered the patient a better chance of recovery from intestinal obstruction, besides the more obvious advantages of avoiding inhalation accidents. Finally it was observed that intravenous injection of novocaine invariably produces cessation of respiration and a marked fall of blood pressure, leading to the death of the animal (Fig. 9).

RECORD OF CASES AND RESULTS OBTAINED.

My series consist of 81 cases operated upon under regional anæsthesia. Of these, 35 cases were operated upon by my corresponding senior colleague—Mr. Arthur Evans; 32 by myself and the remaining 17 cases by the other surgeons at Westminster Hospital. Table I. shows the number of each type of regional anæsthesia employed. The 12 cases of cervical paravertebral comprise: 4 cases of excision of malignant cervical glands—all three were wide dissections by Crile's method; 6 cases of hemithyroidectomy: 2 for exophthalmic goitre, 1 for adenoma, 3 for parenchymatous goitre, including one case with marked dyspnœa, due to pressure on a deviated trachea and complicated by a large retrosternal lobe: and 1 operation for fractured clavicle. The remaining case was that of an epithelioma of the aryepiglottidean fold, with secondary deposits in the cervical glands. The operation consisted in the removal of the glands, ligature of the external carotid, lateral transthyroid pharyngotomy, excision of the primary growth, reconstruction of the pharynx, laryngotomy, and suture. The operation lasted two and a half hours. The patient was 61 years old; he left the table with a pulse of 90. There was no shock. He died in the third week from a mediastinal abscess. Two out of the 12 cases (one exophthalmic goitre and the last case mentioned) had light general anæsthesia towards the end of the operation.

TABLE I.—81 Cases.

Cervical paravertebral	12
Dorsal and lumbar	11
Epidural and sacral	2
Splanchnic	11
Field block only	11
Sciatic, obturator, &c.	2
Median, ulnar, &c.	2

Of the 11 dorsal and lumbar paravertebral, 9 were renal operations: 3 nephrectomies, 3 pyelolithotomies, 2 nephrolithotomies, and 1 nephropexy and appendicectomy. One patient on whom a pyelolithotomy was performed by Mr. Evans had marked curvature of the spine, and the space between the costal margin and the iliac crest was very narrow; unusual pulling on the kidney was necessary before the pelvis could be exposed. No general anæsthetic was necessary, the patient being comfortable throughout the operation. One nephrectomy was done for a pyelonephritis diagnosed five years previously at a genito-urinary hospital; operation was advised, but the patient, a lady of 19 years, preferred Christian Science treatment. When I saw her five years later she had a large tumour in the loin, rigors, purulent urine, and a very low percentage of urea. The kidney was universally adherent and difficult to deliver. The patient had very light general anæsthesia towards the end of the operation. Recovery was uneventful.

The remaining two cases of dorsal paravertebral are of interest.

One was an enormously fat woman, 63 years of age, on whom I operated seven days previously for left posterior subphrenic abscess. She was extremely ill and cyanosed; in the upper part of the abdomen an indefinite tender swelling could be felt deep down behind the extremely adipose abdominal wall; the abscess was still draining. The temperature was 103° F., pulse 130, respiration 35. General anæsthesia was quite out of the question; under regional anæsthesia a transverse incision was made below the costal margin on the left side, through the rectus muscle. A large collection of pus, débris, and gastric contents were evacuated from the lesser sac of peritoneum. The patient recovered. (She died four months later from heart failure.) In one case the third to fifth lumbar and the first and second sacral were injected for persistent pain following a Fourneaux-Jordan amputation done three weeks previously. The relief of pain was rapid, complete, and permanent.

The epidural and sacral block was done in two cases, both for perineal excision of the rectum, performed by Mr. Evans. The 14 cases of field block are shown in Table II. Of these, 11 were successful and three were failures, owing probably to errors of technique. Table III. shows the cases operated upon under splanchnic analgesia. A far larger number of cases was actually done, but I have discarded from this table all those cases that needed a general anæsthetic, after the abdomen was opened.

TABLE II.—*Field Block, 14.*

Orchidectomy	3
Double herniotomy	1
Excision of knee-joint	1
Wiring patella	1
Gastrostomy	1
Miscellaneous	4

TABLE III.—*Splanchnic, 41.*

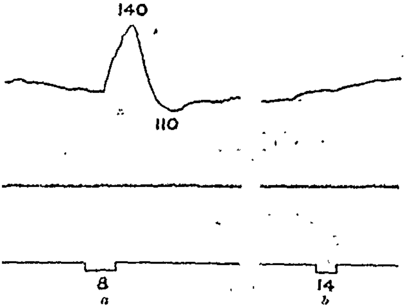
Cholecystectomy	10
Cholecystostomy	4
Gastrectomy	6
Gastrojejunostomy	5
Right hemicolectomy	2
Appendicectomy	1
For acute intestinal obstruction	6
Laparotomy	4

After inducing splanchnic anæsthesia there is generally a slight fall of blood pressure for 10 or 15 minutes, then the blood pressure rises above normal, the pulse becomes slower. Some patients complain of nausea when the stomach is manipulated; in the cases in this table the analgesia was successful, and the following important points were noticed: (1) Relaxation of the recti was perfect; (2) manipulations of the viscera, even when doing a gastrectomy, had little effect on the blood pressure; (3) there was complete abdominal silence; (4) suturing the abdomen presented no difficulty. In other cases, however, parietal anæsthesia alone was obtained. In these ether was administered. It is very important that only the light first stage should be aimed at, as if the second stage is reached the patient begins to struggle and a good deal of the benefit of the regional method is lost.

In cases of acute intestinal obstruction splanchnic analgesia has no rival. I will quote one case:

I was asked to see a woman aged 70; she had intestinal obstruction of four days' duration. I was shown several bowls of fæcaloid material vomited by the patient during the day. The abdomen was distended, constipation was absolute, the pulse weak and at the rate of 110, temperature was normal. The operation was done under splanchnic analgesia, a loop of small intestine strangulated by bands was resected and end-to-end anastomosis performed; a tube was inserted in the small intestine above. I am convinced the patient would not have survived the operation had a general anæsthetic been given.

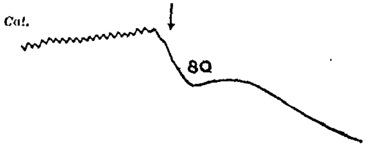
FIG. 8.



Blood-pressure tracing of a cat before (*a*) and after (*b*) splanchnic anæsthesia: effect of violent manipulation of stomach on blood pressure shown at 8 and 14.

Cholecystectomy was done in ten cases, hemicolectomy for carcinoma of the cæcum and ascending colon—twice; of the six gastrectomies, four were for chronic ulcers situated high up on the lesser curvature, one for a pyloric ulcer and one for carcinoma of the stomach. Of all these cases, only one died: from peritonitis following a leakage after a gastrectomy. Cutting and suturing the various mesenteries were painless.

FIG. 9.



Curve showing fall of blood pressure (with cessation of respiration) due to intravenous injection of novocaine (♏ xx. of 1 per cent. solution).

ADVANTAGES OF REGIONAL ANÆSTHESIA.

Operations can be performed with greater safety on patients with cardiac, renal, or pulmonary disease or diabetes. In acute obstruction, inhalation pneumonia is avoided and the toxæmia is reduced. Post-operative vomiting is only occasionally observed. There is marked diminution of shock. It is sufficient to witness a patient at the end of a severe operation to realise the value of the method. The charts show (Fig. 10) the condition of the blood pressure and the pulse-rate throughout a prolonged operation. What concerns pulmonary complications, it is claimed that those complications due directly to the inhalation of ether or chloroform are abolished. It is not claimed that the incidence of pulmonary embolism will in any way be affected by regional anæsthesia; but the effects of the vapour on the lungs is abolished. I quote from Prof. McDowall[19]: "It does not seem to be appreciated that the lung tissue may, apart from mere irritation, suffer serious damage as a result of actual contact with the vapour of ether or chloroform." Further, under deep ether or chloroform anæsthesia, "the bronchioles do not contract (Brodie and Dixon quoted by McDowall) and the alveoli are exposed to particles which otherwise do not reach them." This accounts for such post-operative pulmonary complications which are preventable by substituting regional for general anæsthesia. Of all the cases in my series, none developed pulmonary complications. As regards reduction of mortality, the figures are too small to carry any conviction, but of all the 84 cases considered here, only four cases died—a mortality of 4·7 per cent., which compares favourably with the general mortality of the surgical cases of the same hospital, especially if it be taken in consideration that in many cases much more extensive operations were performed than would have been the case under general anæsthesia.

FIG. 10 A.

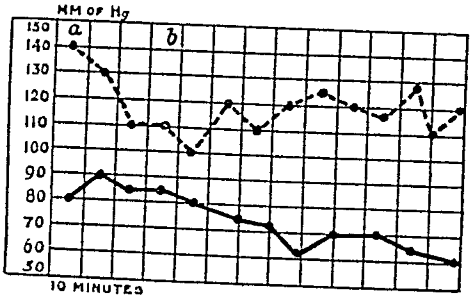


FIG. 10 A.—Partial gastrectomy, male, aged 60.

FIG. 10 B.

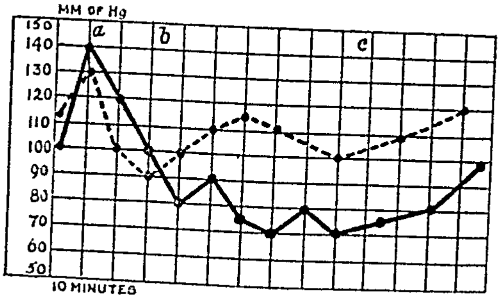


FIG. 10 B.—Right hemicolectomy, female, aged 31.

The thick line indicates pulse-rate and the dotted line shows blood pressure. (a) Induction of anæsthesia; (b) beginning of operation; (c) end of operation.

Disadvantages of the Method.

To the patient, even under the influence of morphine and scopolamine, the multiplicity of the punctures necessary for the induction of anæsthesia is irksome; repeated contact of the needle with the periosteum or nerve trunks is very trying. Also, the psychic element must be taken in consideration. The public, as well as the profession, has yet to become accustomed to regional anæsthesia. I am at present engaged in finding suitable doses and methods of administration of drugs which induce sleep and raise the blood pressure. I have reason to believe that, with suitable administration of chloralose or a similar drug, regional anæsthesia will become popularised. At present it is essential, as the patient is conscious, that absolute silence be maintained in the theatre; the patient must not see or hear the instruments; he must not be asked if he is being hurt—he will soon volunteer the information if he is.

To the surgeon there is the disadvantage at present to have to induce the anæsthesia himself, or to obtain the services of two anæsthetists. The surgeon must also understand that his technique must be adapted to regional methods. He must be gentle with intent, right through the operation. He must discriminate between complaints due to pain and those due to nervousness.

Although the toxicity of novocaine is very low, its use is sometimes followed by signs of intolerance; these have occurred in two cases: there were pallor, tachycardia, cyanosis of the finger-tips, and sweating. An injection of pituitrin or caffein quickly restores the patient's condition.

In one case, after a unilateral paravertebral from the sixth to the twelfth dorsal nerves, there was marked pallor of one-half of the face on the side of the injection, in great contrast with the flushed appearance of the opposite side; also the pulse at the wrist on that side was imperceptible, whilst on the opposite side the pulse was normal in volume and frequency; the general condition of the patient was good. In two cases, one paravertebral and one splanchnic, the blood pressure dropped suddenly during the induction, and respiration ceased. It was due to the inadvertent injection of novocaine into a blood-vessel. Both patients recovered.

One case of inoperable carcinoma of the liver and gall-bladder suddenly became unconscious at the end of the operation, and died 24 hours later without recovering consciousness.

Conclusion.

Regional anæsthesia has been in existence 20 years. From my personal observations of the method as used by Prof. Pauchet in Paris, from the experience of my own cases, and from the study of experiments on animals I am led to the conclusion that regional anæsthesia has its place not only as a life-saving measure in the surgery of the old, the feeble, and the diseased, but as a routine measure in numerous routine surgical procedures.

The experimental work was performed in the physiological laboratories of King's College, and I am indebted to Prof. McDowall for the facilities afforded, and his criticism of the work. Finally, I wish to thank Mr. Evans for the interest he took in the method since I began to use it; for his willingness to operate under regional anæsthesia, and for his help and encouragement on numerous occasions. And I take this opportunity to express my appreciation. My thanks are also due to Mr. Rock Carling, who used the method on 14 occasions, and to Mr. C. Price Thomas, for his constant and ungrudging help in the operating theatre, the physiological laboratory, and for the preparation of the dissections used to illustrate this lecture; and to Mr. Sewell, I am indebted for the illustrations.

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SPLANCHNIC ANALGESIA,

WITH RECORD OF NINETY-ONE CASES.*

I.—SURGICAL ASPECT.
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II.—ANÆSTHETIC ASPECT.
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HON. ANÆSTHETIST TO THE ABOVE HOSPITAL.

I.—SURGICAL ASPECT. *By* MR. HILLMAN.

THE principles of anoci-association as brought forward by Crile are known to you all and no doubt practised by many. That this method gives great advantages to both patient and surgeon there is, I think, no doubt, but as the method consists of the production of a local or infiltration anæsthesia in the operative field it has its limitations and perhaps disadvantages. I propose to put before you a method which is based on Crile's principles but differs in that the analgesia produced is regional and not local, and for this reason enables the method to be applied to the blocking of impulses passing from the abdominal viscera to the central nervous system.

Splanchnic analgesia consists in placing a block across the path of impulses passing from the viscera via the cœliac ganglia and the great splanchnic nerves to the central nervous system. This is done by placing a certain amount of 1 per cent. novocaine in the path of the splanchnic nerves.

Basic Principles.

It is necessary to show that splanchnic analgesia is based on sound principles. To do this I cannot do better than refer to an article by Prof. C. A. Pannett in the *British Journal of Surgery*, Vol. II. Prof. Pannett shows by animal experiments that novocaine placed in relation to the mesenteries of the viscera definitely protects the animal from shock produced by handling those viscera. He also shows that the rigidity of the abdominal wall in operations on the abdomen is considerably reduced when the mesenteries of the viscera operated upon are infiltrated with novocaine. This shows that the rigidity of the abdominal wall is not entirely due to irritation of the parietal nerves, and therefore injection of these nerves alone will not give the same relaxation as if the visceral nerves are blocked as well.

I am fortunate in having a clinical example of this. I was asked to give a splanchnic anæsthetic to a patient with a perforated gastric ulcer who was very ill. When I saw him he was groaning and writhing with pain and his abdominal wall was board-like. With great difficulty I succeeded in performing the injection, and when I turned him on to his back I was surprised to find him lying quite peacefully and apparently without pain. I spoke to him and he volunteered that all his pain had vanished. This gave me remarkable proof of the efficacy of the splanchnic block.

The important fact to be grasped from this is that afferent impulses do pass to the central nervous system from the viscera, and that these impulses can be interrupted by placing a block across the visceral nerves. This is the justification for splanchnic analgesia.

In the human subject the upper abdominal viscera are supplied by nerves through the great splanchnic nerves, which are derived from the fifth to the ninth or tenth dorsal nerves and also by the lesser and least splanchnic nerves which run in close proximity. These nerves pass through the crura of the diaphragm and are distributed to the various viscera via the cœliac ganglia. For the induction of splanchnic analgesia it is necessary to place novocaine in the path of these nerves, and this is done at the level of the first lumbar vertebra.

In order to complete the analgesia for an abdominal operation it is of course necessary to place a block across the paths of the nerves of the abdominal wall. This is done by performing an abdominal field block, the technique of which I described fully in my article on Splanchnic Analgesia in THE LANCET, July 5th, 1924.

Technique.

It is of course possible to operate under splanchnic analgesia alone, and when I commenced this procedure this was done with considerable success. This method must mean a considerable amount of psychic shock to the patient, it certainly entails a great deal of mental strain on the surgeon to perform a major operation on a conscious subject, and it certainly is more of a strain to perform the injection on a person who may move at any moment. For these reasons I changed the technique and now give the injection under light ether anæsthesia which is continued throughout the operation, so that the splanchnic injection is used as a means of reducing shock and reducing the amount of anæsthetic drug administered, both of which objects have been fully attained.

In my article quoted above, I gave a full description of the technique of the splanchnic injection, and in THE LANCET of July 12th (p. 70) I gave a description of the syringe that I had made for the purpose. Since then I have slightly modified the procedure, for instead of making the injection opposite the first and second lumbar vertebræ I now make it opposite the first only. In this way, after striking the first lumbar vertebra and getting the needle in the correct position 1 cm. beyond, an injection is made of 30 c.cm. of 1 per cent. novocaine, the needle is then withdrawn, and the same injection made on the other side. It will be seen, then, that the dose of novocaine has been reduced from 90 c.cm. for the splanchnic injection to 60 c.cm., and equally good results seem to be obtained.

The technique is not difficult, but it must be carried out in detail and with great care, and especially must aspiration *always* be done before injecting the novocaine, for, should that quantity of novocaine be discharged into the blood-stream, the result would be a fatality. It is essential for good results that the operator have a mental picture of where his needle is going; if he has not he cannot overcome any difficulties that may arise, and also he may become careless and forget that his needle is in a dangerous area.

It need hardly be pointed out that gentleness is essential. This is especially the case when making the injection on a conscious subject, though unconsciousness must be no excuse for roughness. If the bone be struck roughly the point of the needle will be turned and will tear the tissues on withdrawal, unnecessary shock will be caused, and in a conscious patient pain.

Advantages and Disadvantages.

I will now proceed to discuss the following points: (1) The advantages and the disadvantages to the surgeon; (2) the advantages and the disadvantages to the patient; (3) the effects on the pulse-rate and the blood pressure.

1. *Advantages to the Surgeon.*—The most striking phenomenon on watching a case under splanchnic anæsthesia is the smallness of the respiratory excursion as compared with those of a similar case under purely ether anæsthesia of as light a depth; this is, of course, of immense help to the operator. There is complete and perfect relaxation of the abdominal wall with a light depth of anæsthesia. There is complete absence of sudden straining on the part of the patient when any necessary traction is made. This is

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* Delivered before the Section of Anæsthetics of the Royal Society of Medicine.

especially seen when operating on the gall-bladder and ducts. It is well recognised how difficult some patients can be when operations are carried out on the biliary tracts, straining and deep respirations occurring on the least traction: all this is eliminated if the splanchnic nerves have been successfully blocked. Lastly the surgeon is relieved of any anxiety, as he knows that his patient is receiving no shock, though this again must be no excuse for rough operating. The surgeon also is left with a free hand to do whatever he may think best for his patient, even though it involves a great deal of time and manipulation.

2. *Disadvantages to the Surgeon.*—These are, perhaps, two in number, though I think that they are easily overcome by the benefits that the patients derive. The first is the addition of 15 minutes to the time to anæsthetise the patient. This is the time that I now take to perform the injection, though at first, of course, it took longer. The second is the fact that if the operation be a long one the effect of the field block of the abdominal wall may wear off, though I think that this is really an error in technique than a real disadvantage. If this occurs it can readily be overcome by the coöperation of the anæsthetist, who, after the experience of a few cases, will recognise if deepening of the anæsthesia be needed or not.

3. *Advantages to the Patient.*—I will merely state what we consider these to be, leaving Dr. Apperly to deal with them in more detail: (1) The patient receives less anæsthetic drug; (2) there is the minimum of shock; (3) there is no fatigue from excessive respiratory excursions; (4) there is no "falling off" of the condition of the patient after return to the ward, as is so often the case after ether anæsthesia; (5) the day following operation the patient is in better condition owing to the absence of shock; (6) owing to the diminution of the amount of the anæsthetic drug administered there is less vomiting; (7) there is less liability to chest complications; (8) there appears to be less post-operative pain; (9) some patients who would be considered beyond surgical aid can be given the chance of an operation by means of splanchnic analgesia.

4. *Disadvantages to the Patient.*—In a few cases there has appeared to be a tendency to flatulent distension of the abdomen, but its incidence does not seem to be greatly increased. In one case a patient complained of severe neuralgic pain in the back. It was, however, never definitely established that the pain was due to the injection, though perhaps it is better to regard it as such. Some cases have suffered with severe headaches of two or three days' duration.

Effects on the Pulse-Rate and the Blood Pressure.

In a number of cases operated upon by Mr. Gordon-Taylor under splanchnic analgesia I have taken readings of the pulse-rates and blood pressures and from these readings prepared graphs. Most of the cases from which these graphs were obtained were partial gastrectomy cases, though some were laparotomies for suspected ulcers in which little was found, and only the appendix removed; however, whatever the operation, all the graphs show the same sequence of events. There is a distinct fall of blood pressure after the injection is made, this fall lasting on the average for 20 minutes; after this time the pressure steadily rises throughout the operation, until in about an hour's time it has reached the patient's normal level or even in many cases surpassed it. The fact that there is the same fall whether it is a severe operation or not, and that the pressure is higher at the end than at the beginning of the operation shows that the fall cannot be attributed to shock.

With regard to the pulse-rates, these in all cases show little variation from the normal, a fairly even rate being maintained throughout the operation. The striking point is that when the pressure falls the pulse-rate does not rise, sufficient proof that shock is absent and also that the fall in blood pressure is not dangerous.

Commentary on Cases.

I have now performed the splanchnic block on 49 cases; of these 38 were upper abdominal ones, and of the 38, 26 were partial gastrectomy cases. Of this series not one patient has developed any chest complication and only two died immediately after the operation. These two patients were so desperately

TABLE I.—*Partial Gastrectomy Cases.*

—	Average pulse-rate after operation.	Immediate mortality (per cent.).	No. of blood transfusions.
Without splanchnic analgesia, 31 cases ..	111	12·9	14
With splanchnic analgesia, 31 cases ..	85	3·2	2

TABLE II.A.—*Mr. Hillman's Cases of Splanchnic Analgesia.*

No.	Age and sex.	Disease.	Operation.	Result.
1	43, M.	Pyloric ulc.	Partial gastrectomy.	R.
2	43, M.	Carc. pylorus.	,, ,,	R.
3	—, M.	Gas.-jej. ulc.	,, ,,	R.
4	46, F.	,, ,,	,, ,,	R.
5	42, F.	Gas. ulc.	,, ,,	R.
6	56, M.	Carc. stom.	,, ,,	R.
7	32, M.	Gas. ulc.	Total gastrectomy.	R.
8	47, F.	,, ,,	Partial gastrectomy.	R.
9	35, M.	,, ,,	,, ,,	R.
10	46, M.	,, ,,	,, ,,	R.
11	60, F.	Pyloric ulc.	,, ,,	R.
12	47, F.	Gas. ulc.	,, ,,	D.
13	45, M.	Duod. ulc.	,, ,,	R.
14	51, M.	Gas. ulc.	,, ,,	R.
15	39, M.	Duod. ulc.	,, ,,	R.
16	46, M.	,, ,,	,, ,,	R.
17	40, M.	Gas. ulc.	,, ,,	R.
18	41, M.	,, ,,	,, ,,	R.
19	44, F.	,, ,,	Sleeve resection.	R.
20	—, F.	Duod. ulc.	Partial gastrectomy.	R.
21	48, M.	,, ,,	,, ,,	D.
22	44, F.	Gas. ulc.	,, ,,	R.
23	48, M.	,, ,,	,, ,,	R.
24	59, M.	,, ,,	,, ,,	R.
25	62, F.	,, ,,	,, ,,	R.
26	50, M.	,, ,,	,, ,,	R.
27	40, M.	Duod. ulc.	Gastro-jej.	R.
28	48, M.	Carc. duod.	,, ,,	R.
29	67, F.	Carc. stom.	,, ,,	R.
30	67, F.	Carc. panc. Pyloric sten.	Cholecyst-ent. Gastro-jej.	D.
31	56, F.	Chr. panc.	Laparotomy.	R.
32	67, M.	Gall-stones.	Cholecystectomy.	R.
33	55, F.	,, ,,	,, ,,	R.
34	39, M.	Chr. appx.	Appendectomy.	R.
35	—, M.	Gas. colic fistula.	Laparotomy.	D.
36	39, F.	Malig. ovary.	Ovariotomy.	R.
37	68, F.	Pelvic appx. abscess.	Drainage.	R.
38	—, F.	Old gas.-jej.	Laparotomy.	R.
39	53, F.	Adhesions.	Band divided.	R.
40	41, M.	Chr. appdx.	Appendectomy.	R.
41	33, F.	,, ,,	,, ,,	R.
42	53, M.	Perf. gas. ulc.	Ulcer closed.	D.
43	29, M.	Old gas.-jej.	Adhesions cut. Appendectomy.	R.
44	26, M.	Splenic anæmia.	Splenectomy.	R.
45	53, F.	Gas. ulc.	Gas.-jej.	R.
46	60, F.	Carc. panc.	Cholecystenterostomy.	R.
47	65, M.	Carc. cæcum.	Ileo-colostomy.	D.
48	—, F.	Cholecystitis.	Bile-duct drained.	D.

Total number of cases, 48; number of gastrectomies, 26; no post-operative pulmonary complications.

Comments.—(1) 25 min.; no anæsthetic. (2) 6 drms. chloroform. (3) Operation 2 hr. 20 min. (4) Operation 2 hr. 15 min. (6) Very poor subject. (7) Very wasted, anæmic, paravertebral. (8) Pain in back after. (9) 1 hr. 20 min.; no anæsthetic. Tubercle. (10) and (11) Paravertebral. (12) Died 8 hr. after. Bad hæmatemesis case. (14) Hæmatemesis 2 days; blood transfusion. (21) Fatty heart; nephritis. (22) Told carc. before. (27) Paravertebral. (28) No anæsthetic. Said felt no pain. (29) Very ill and weak. (30) Died five days after. (32) Paravertebral. (33) Right side only. (35) Died shortly after. (36) 3 drms. ether. (37) Chloroform, 2 drms. (42) Died 5 days after; peritonitis. (46) Paravertebral. (47) Died 5 days after. (48) Died 3 days after; heart failure.

ill that it was only the fact that splanchnic analgesia could be used that enabled them to be given the faint chance of an operation. That is to say, that out of 49 cases there were no chest complications and no deaths from shock, although the series contains some very difficult upper abdominal cases and that at least one patient had a very definite bronchitis and one a tuberculous lesion of the lung on account of which he had been refused operation at another hospital.

A comparison of 31 cases of partial gastrectomy with and without splanchnic analgesia is interesting. This shows that the average pulse-rate after operation has dropped by 26 and the deaths from shock to have been reduced from 12·9 per cent. to 3·2 per cent. (the one death being one of the desperate cases mentioned). Table I. shows that the number of blood transfusions has fallen from 14 to 2, and in both the latter it was given for previous hæmatemesis and not for shock.

I trust that I have shown that splanchnic analgesia has a definite value in abdominal surgery. I do not think that all upper abdominal cases need it, though I think that they are all the better for it. In the case of gastric surgery, however, where the extent of the lesion is always doubtful until the abdomen is opened, I do suggest that the surgeon will be happier in what he does if he knows that the splanchnic nerves are blocked. Therefore, for these cases I suggest that splanchnic analgesia should be induced as a routine, and be combined with as little general anæsthetic as possible. In this way shock will be overcome and the chance of the patient developing a chest complication will be reduced to a minimum.

TABLE II.B.—*Dr. Apperly's Cases of Splanchnic Analgesia.*

No.	Age and sex.	Disease.	Operation.	Result.
1	56, M.	Gas. ulc.	Partial gastrectomy.	R.
2	51, F.	Abscess in abd. wall.	Exploration.	R.
3	36, F.	Cholecystitis.	Cholecystectomy.	R.
4	57, M.	Gas. ulc.	Partial gastrectomy.	R.
5	42, F.	Appendicitis.	Explor. lapar. Appendectomy.	R.
6	58, M.	Gas. ulc.	Partial gastrectomy.	R.
7	38, F.	" "	" "	R.
8	42, M.	Carc. stom.	Gas.-jej.	R.
9	43, F.	Cholecystitis.	Cholecystectomy.	R.
10	77, F.	Carc. stom.	Gas.-jej.	R.
11	48, M.	Duod. ulc.	" "	R.
12	44, F.	Gas. ulc.	Partial gastrectomy.	R.
13	60, M.	Cholecystitis.	Cholecystectomy.	R.
14	38, M.	Duod. ulc.	Gas.-jej.	R.
15	50, M.	Gas.-jej. ulc.	Partial gastrectomy.	R.
16	28, M.	" "	" "	R.
17	57, M.	Gas. ulc.	Cautery to ulc.; ligature of vessel.	R.
18	36, M.	" "	Partial gastrectomy.	R.
19	69, F.	" "	" "	D.
20	67, F.	Carc. stom.	Laparotomy.	D.
21	53, F.	" "	Gas.-jej.	R.
22	45, F.	Duod. ulc.	Gas. duod.	R.
23	51, M.	Gas. ulc.	Partial gastrectomy.	R.
24	36, M.	" "	" "	R.
25	50, M.	Appd.	Laparotomy and appendectomy.	R.
26	50, M.	Carc. stom.	Laparotomy.	R.
27	48, M.	Cholecystitis.	Cholecystectomy.	R.
28	58, M.	Gas. ulc.	Partial gastrectomy.	R.
29	53, F.	Adhesions, appendicitis.	Appendectomy.	R.
30	58, M.	Cholecystitis.	Cholecystectomy.	R.
31	24, M.	Duod. ulc.	Gas. duod.	R.
32	59, M.	Malig. glands in abdomen.	Laparotomy.	R.
33	45, M.	Gas. ulc.	Partial gastrectomy.	R.
34	52, M.	Carc. stom.	Laparotomy.	R.
35	24, M.	Splenic anæmia.	Splenectomy.	R.
36	50, M.	Gas. ulc.	Partial gastrectomy.	R.
37	41, M.	" "	" "	R.
38	37, F.	Adhesions.	Laparotomy.	R.
39	51, M.	Malig. disease of colon and small intestine.	Ilio-colostomy; cæcostomy.	D.
40	52, F.	Cholecystitis.	Cholecystectomy.	R.
41	59, M.	Gas. ulc.	Partial gastrectomy.	D.
42	55, M.	" "	" "	D.
43	64, M.	Cholecystitis.	Cholecystectomy.	R.

Total number of cases, 43; gastrectomies, 17; cholecystectomies, 7.

Comments.—(2) Later developed pyelitis. (4) Headache. (5) Headache for two days. (6) Emphysema and bronchitis. (7) Hæmatemesis. (9) Rt. splanchnic and double paravertebral. (12) Paravertebral. (13) Very bad asthma and bronchitis. Rt. splanchnic. (15) 2 hr. 20 min. (16) 2 hr. 15 min. (17) Hæmatemesis. (18) Headache and backache two days. (19) Died 14 days. (20) Died eight weeks. (22) Headache. (25) Cirrhosis of liver. (30) Bad bronchitis and emphysema. (39) Died ninth day. Hæmorrhage into bowel from growth. (41) Died fourth day. Broncho-pneumonia. (42) Died fifth day. Hæmorrhage from suture line.

In conclusion, I wish to express my gratitude to Mr. Gordon-Taylor for his encouragement, and especially his patience, during my early trials, and also for his permission to base this paper on the cases that he has operated upon. I would also like to acknowledge the keenness with which the honorary anæsthetists of the Middlesex Hospital coöperated with me in this work.

II.—ANÆSTHETIC ASPECT. *By* DR. APPERLY.

One cannot help feeling that some anæsthetists have in the past rather looked askance at, if not almost resented, the introduction of any method of regional or local anæsthesia. One reason for this may be the dislike common to most of us, particularly as we get older and perhaps busier, of making the effort involved in mastering a new technique and shouldering a new anxiety. However that may be, the fact remains that few anæsthetists in this country use regional methods, and many still even leave spinal anæsthesia to be done by the surgeon if the case requires it.

Had it not been for the constant help and encouragement of Mr. Gordon-Taylor and Mr. Hillman, and my other surgical colleagues at the Middlesex Hospital, I should not have had the courage to attempt splanchnic block and other methods of regional anæsthesia. Since we first tried it, Mr. Hillman or myself have done a splanchnic block with abdominal field block in every gastric case which has passed through our hands in which a partial gastrectomy was anticipated, and also, as our lists show, in other operations in the upper abdomen which we thought presented special surgical difficulties, or where the patient suffered from chest complications.

I personally have no longer any doubt that combined regional and general anæsthesia will in the future be very largely used in all the more extensive surgical procedures. It is already used in abdominal-perineal excision of the rectum, Wertheim's hysterectomy, and often in prostatectomy; and recently we have used it with success in block dissections of the neck. I consider that the anæsthetist is the most desirable person to give the regional, as well as the general, anæsthetic. In a big case the surgeon has quite enough to worry him without having to attend to part of the anæsthetic arrangements, and few patients in private practice would like to pay the fees of both a regional and general anæsthetist. I would therefore urge anæsthetists to take a greater interest in regional methods as an addition to, rather than a substitute for, their present armamentarium.

Perhaps the greatest drawback to regional anæsthesia is the time taken in doing it. This particularly applies to hospital work, where a busy surgeon, with much to do and little time to do it in, may unconsciously discourage the anæsthetist from undertaking any new work because of the extra time involved. I am, however, sure that in some cases the results obtained by combined regional and general anæsthesia are so strikingly good as to justify the extra time taken, and besides, as the anæsthetist becomes more experienced in the method, the time taken is very greatly shortened.

Technique.

Splanchnic anæsthesia presents no great difficulties from the anæsthetist's point of view, provided the method has been practised sufficiently in the post-mortem room, and the technique which Mr. Hillman has described is carried out in every detail. In the first few cases no general anæsthetic was used except towards the end of the operation, by which time, the abdominal field block was wearing off, and a little general anæsthetic was given for stitching up the abdominal wall.

In these cases morphine gr. ¼, scopolamine 1/100, was given one and a half hours before operation and morphine gr. ⅙, scopolamine 1/200 half an hour before. We quickly found, however, that a light general anæsthesia throughout did no harm, but had the following distinct advantages. (1) There was no need for the large preliminary dose of morphine and scopolamine which was almost a necessity if no general anæsthetic was given. (2) The splanchnic block was made much easier, took less time, and was, of course, painless. (3) Towards the end of a large operation, when the field block is wearing off, the anæsthesia can be quickly deepened and the closure of the abdominal wound facilitated. (4) Psychic shock was abolished. (5) The strain on the surgeon, to say nothing of the anæsthetist, is lessened if they are dealing with an unconscious patient.

Therefore after the first few cases the anæsthetic technique has been as follows: Morphine gr. ⅙ or ¼, atropine gr. 1/100, was given three-quarters of an hour before operation. General anæsthesia was induced, either gas and ether or chloroform and ether, and the splanchnic and abdominal field block then done in the anæsthetic room. Directly that is done, generally occupying about 20 minutes to half an hour, the patient is taken into the theatre, and general anæsthesia maintained with ether and oxygen, or chloroform and ether and oxygen. The abdominal incision should not be made until five minutes after the abdominal field block is finished.

Effect on Blood Pressure.

The blood pressure commences to fall shortly after the first splanchnic injection and reaches its minimum at the end of about half an hour, from which time it commences to rise again until by the end of one hour it is, as a rule, actually back to what it was before operation. In other words, the fall in blood pressure is of very short duration. It may be well to mention that it is extremely important to move the patient gently after the injections are made, and to avoid raising the shoulders too high, otherwise the blood pressure may fall very rapidly.

In private practice, of course, the anæsthetist, after inducing anæsthesia, has to call to his aid the doctor of the case or the surgeon's assistant to maintain a light anæsthesia while the regional blocks are done. It is extraordinary how light an anæsthesia can be maintained after the first injection. Patients who have been difficult during induction become quite placid, presumably owing to the fall of blood pressure. I would emphasise the point that the regional blocks cannot be hurried, but to be successful must be slowly and deliberately done. The anæsthetist will be aware of the success or otherwise of the splanchnic anæsthesia directly the surgeon handles abdominal contents. If the splanchnic block is effective the breathing should neither alter in rhythm or rate, even when considerable traction is put on any of the contents of the upper abdomen and the general anæsthesia is light.

With splanchnic anæsthesia, as in all other forms of regional or local anæsthesia, even when accompanied by light general anæsthesia, if the best results are to be obtained, there must be cooperation between the anæsthetist and surgeon. The anæsthetist must ascertain the exact position of the incision the surgeon proposes to make before doing his field block and even make his area of anæsthesia sufficiently wide to allow of a slight extension of the wound if necessary. On the other hand, the surgeon must not stray outside the anæsthetic area without warning the anæsthetist first, so that the nerve block may be extended or the anæsthesia deepened. In the same way heavy retractors used too forcibly or muscle torn instead of cut may pull on tissues outside the blocked area, and render a deepening of the general anæsthesia necessary, and then part of the benefit of the nerve block may be lost. One of the great advantages of the method is the quiet respiration and absence of movement of the abdominal contents; but once this is disturbed it is often difficult to restore it again. Thus the sudden thrusting of a hand without warning into the pelvis—an unanæsthetised area—in the course of an operation on the upper abdomen may create difficulties for both surgeon and anæsthetist.

It cannot be too strongly urged on the surgeon who wishes to get the best results from regional anæsthesia that gentleness in the treatment of the tissues is absolutely essential. In dealing with the advantages and disadvantages as we think of the method, I should like to take the disadvantages first.

Disadvantages of the Method.

1. *Fall of Blood Pressure.*—The blood pressure tracings demonstrate that the blood pressure falls often very considerably and very rapidly, but in only one case has it caused any anxiety whatever. It was in a case of cholecystectomy, where the patient's shoulders were lifted very suddenly in order that an air-cushion should be placed under the back. The anxiety, however, was very short-lived, as was the fall in blood pressure. However, this case taught us to exercise care in moving patients after the splanchnic injection has been made. Bearing this disadvantage in mind, we think that in cases where the patient has a very low blood pressure or where the circulation has been recently depleted by a gastric or duodenal hæmorrhage, it is wise perhaps to reduce the amount of novocaine used. One can reduce the amount used in the splanchnic block, say, to 20 c.cm. in each side, and that in the abdominal field block by using ½ per cent. instead of the usual 1 per cent. solution.

2. The second disadvantage we have found is *post-operative headache and backache.* Six or seven of our cases have suffered more or less severely from headache and backache. We have been rather at a loss to explain this, as although our technique has been practically the same throughout all the series, we have not had this complication arise in the last 40 odd cases. It is true we have become more dexterous with the needle and therefore have not damaged tissues to the same extent, but we cannot think that has been the real cause.

We thought that the fall in blood pressure might account for it; but in those cases in which the fall of blood pressure has been most marked there has been no headache. We think therefore that probably the real explanation of the disappearance of this disagreeable complication may be in the fact that we have latterly used a smaller amount of novocaine in our splanchnic block. One other possible explanation of the headache has occurred to me in that it resembles closely the headache which occurs after spinal puncture. In our earlier cases, on a few occasions, we tapped the spinal theca or a prolongation along the nerve, and cerebro-spinal fluid escaped, and this error in technique might furnish an explanation, especially as this complication has not arisen as we become more expert.

3. *Time Taken in Doing the Nerve Block.*—As I pointed out before, this is an undoubted disadvantage, especially in hospital practice. But if the mortality in severe operations in the upper abdomen is lowered by the use of splanchnic anæsthesia, as we think it is, no one will grudge the extra half an hour spent in the anæsthetic room.

4. One other slight complication has arisen in two of our cases which in fairness must be recorded. They were bad gastric cases where the stomach was not entirely empty. The cardiac sphincter being relaxed by the splanchnic block, when the stomach was handled by the surgeon gastric contents commenced to regurgitate. The passing of a stomach-tube was, however, difficult, as the patient was under very light general anæsthesia, and its introduction was at once resented. In neither case, however, did any harm result.

Advantages of the Method.

1. *Absence of Post-operative Pulmonary Complications.*—In our combined cases—numbering 91—we have only had one case in which there has been any post-operative lung complication. We think this is distinctly good in so large a series of upper abdominal operations. It, however, becomes strikingly good, if we take into consideration the fact that a number of the gall-bladder cases and some of those in which gastro-jejunostomy was performed were done by this method at the request of our surgical colleagues, owing to the existence of bronchitis or some other pulmonary complication. In none of these cases was the chest condition appreciably aggravated by their operation.

The one pulmonary complication which occurred was in the forty-first of my cases. The patient was a man of 50 on whom a partial gastrectomy was performed for a large gastric ulcer high up in the lesser curvature. It was a very difficult case and the patient was in the theatre 1 hour and 35 minutes. He developed broncho-pneumonia on the second and died on the fourth day. He had extensive broncho-pneumonia of both lower lobes. He was medically a very fit and suitable subject for operation, which makes his case the more disappointing. On the whole, therefore, we think that perhaps the most striking advantage of the splanchnic and abdominal field block from the anæsthetist's point of view is the absence of pulmonary complications in a class of case which has in the past been particularly prone to them.

2. *Quiet respiration* and diminished abdominal movement with which it is associated. This, as Mr. Hillman has pointed out, is a great help to the surgeon. It is, however, equally important from the anæsthetist's point of view, as quiet respiration does not exhaust the patient, a very important point if the operation be a lengthy one and the patient past middle life. In elderly patients with emphysema and bronchitis I am sure it is a most potent factor in preventing post-operative lung complications.

3. *Perfect relaxation* for which, of course, one relies entirely on the nerve blocks, until perhaps the closing of the abdominal wall in a long case.

4. *Small Amount of General Anæsthetic Used.*—I count this as an advantage, not from the point of view of the anæsthetist's pocket, but from the fact that the patient is very little upset after operation, and sickness is very greatly reduced.

In trying to give this unbiased account of our work we do not pretend that the method should be adopted in every operation on the upper abdomen, but we do suggest that it has been the means of saving the lives of some of the patients on our lists and enabled operations to be performed on others which would not have been attempted under general anæsthesia alone.

In conclusion, I have to acknowledge my indebtedness to Mr. Gordon-Taylor, Mr. Webb, and my other colleagues at the Middlesex Hospital for their patience, encouragement, and help.

Yorkshire's Crippled Children.—It is estimated that there are in Yorkshire 5000 children of school age needing orthopædic treatment, but the existing hospitals in the county can receive only 250. The position will shortly be eased by the provision of a new orthopædic hospital at Kirbymoorside, where there is an ex-Servicemen's Red Cross hospital, consisting of army huts and a stone bungalow. These buildings, which are in sound condition, have been presented by Mrs. Edward Shaw, of Welburn Manor, and the Right Hon. J. R. Ferens, of Hull, has given £5000. The new hospital has room for 100 beds and there is sufficient land to allow of considerable expansion. The income will be derived mainly from payments by local authorities in respect of patients sent by them.

APLASTIC ANÆMIA FOLLOWING TREATMENT WITH X RAYS.

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From time to time cases have been described amongst workers with X rays and with radium, where the prolonged exposure to the rays has produced very severe blood changes with a fatal result. One of the earliest cases was that of an Italian worker, who had for 14 years been accustomed to work with a very hard focus tube, and who took little precaution for his protection.[1]

Mottram (1920), in a paper[2] dealing with the leucocytic blood content of individuals working with radium, describes a diminution in the number of red cells with a high colour-index. In his later paper[3] he reports three cases of profound anæmia with a fatal termination after an illness of a few months. Larkin (1921) reports[4] a case of acute aplastic anæmia in a man of 43, who had been working at radiography for 15 to 18 years. Faber (1923) not only quotes the above cases, but gives[5] a description of another case, and points out the similarity of the blood changes in the series. No post-mortem examinations were done in any of these except in the Italian case.

		R.B.C.	C.I.	W.B.C.	P. (%)	L. (%)
Mottram's cases.	(1)	1,100,000	0·68	1000	50	50
	(2)	800,000	1·3	1520	48	52
	(3)	527,500	0·84	850	13·5	40·5
Larkin's case		1,000,000	0·9	840	41	58
Faber's case		1,250,000	1	2000	L*	L*

R.B.C., red blood corpuscles. C.I., colour-index. W.B.C., white blood corpuscles. P., polymorphs. L., lymphocytes.

L*, mostly lymphocytes in film.

In the first and fourth cases in the above series the colour-index at some time in the course of the disease had been 1 or over. The above cases presumably possessed normal hæmatopoietic organs at the outset.

The therapeutic action of radiation in blood diseases is of extreme interest. Both X ray and radium have now been given an extensive trial in treatment of the leukæmias, and it is generally held that life is prolonged by the use of one or other of these forms of radiation. Gilbert,[6] as long ago as 1914, published a thesis on the treatment of spleno-medullary leukæmia by radium. He stated that the cure was not stable, that signs of leukæmia returned after some weeks had passed, and that with radium treatment after this relapse the number of the leucocytes diminishes less rapidly and the curative action is less effective than when used at first. Peabody,[7] three years later, reports on 30 cases treated, stating that there was general clinical improvement, rapid decrease in the size of the spleen, and that the leucocytes were reduced. Brant[8] states that the Rontgen ray does not cure leukæmia, but that it improves the general condition, restores the earning capacity, and has a favourable action on the erythrocytes. Schreiner and Mattick[9] regard deep Rontgen ray and radium as essentially the same, which view was also expressed by Gulland,[10] who endorsed the views of other workers, stating "all cases relapse after a longer or shorter time. . . . In the long run all cases die of the disease or of an intercurrent affection, but I feel sure that the average length of life is greater than it was before radiation became general, or than it is with any other form of treatment." Gulland further emphasises the need of frequent blood examinations during treatment. He stated that it is quite easy to carry radiation too far, and to produce a condition closely resembling pernicious anæmia with a high colour-index, numerous megaloblasts, and a low red count. This he regards as due to interference with the normoblastic function of the marrow, and remarked that radiation, if persisted in, would perhaps in the end lead to an aplastic anæmia. He added that he had never seen it progress so far. He stops treatment by radiation with a leucocyte count of 20,000, since the effect goes on for some time after radiation has been stopped.

A case is reported by Whitcher[11] in which radium treatment did produce an aplastic anæmia. A summary of his case is of interest, since it shows a close analogy with the case of aplastic anæmia following X ray reported later in this paper.

Clinical Records.

CASE 1.—A boy, aged 11, first took ill in July, 1919. Splenomedullary leukæmia was not diagnosed until April, 1920, when the liver and spleen were both enlarged, the spleen reaching to within 25 cm. of the symphysis pubis. The blood count was typical: R.B.C., 3,150,000 per c.mm.; Hb, 50 per cent.; W.B.C., 161,800, with excess of myelocytes, &c., in the film.

Radium treatment was given at monthly intervals until June, 1921, when the white count was 11,000 per c.mm. The patient was not under observation for the next two months. On Sept. 1st, 1921, the white count was 69,900 per c.mm., with a greater percentage of myelocytes than lymphocytes in the films. Radiation treatment was given that day and the count fell to 20,000 per c.mm. on Sept. 8th. Another treatment was given, and on the 29th it was found that the number of leucocytes had risen to 58,000 per c.mm. with a percentage of 58 lymphocytes in the films. The boy was readmitted to hospital with severe dyspnœa and weakness with irregular fever.

On Oct. 18th the blood count was: R.B.C., 1,118,000 per c.mm.; Hb, 23·5 per cent.; C.I., 1·06; W.B.C., 310. A blood transfusion was given but with little benefit. On Nov. 1st his blood count was: R.B.C., 1,252,000 per c.mm.; Hb, 24 per cent.; C.I., 1; W.B.C., 380 (polymorphs, 18 per cent.; lymphocytes, 70 per cent.; basophiles, 12 per cent.).

This last count, taken just before death, is similar to those cases of aplastic anæmia among X ray and radium workers just quoted. The case is, moreover, very similar to the following:—

CASE 2.—A boy, aged 11 years, was admitted to Paddington Green Children's Hospital on April 11th, 1921. A history of influenza eight weeks previously, with subsequent loss of weight and pallor, was given. The immediate cause of admission was an attack of painful priapism; he had also complained of vague pains in the head and abdomen. On admission the boy was thin and pale. There was slight glandular enlargement. The spleen was enlarged to below the crest of the ilium. A blood examination was made resulting as follows: R.B.C., 1,870,000; Hb, 38 per cent.; C.I., 1; W.B.C., 613,000. The films showed a few normoblasts. The majority of the white cells were of the bone-marrow type, and a diagnosis of splenomedullary leukæmia was made. During the next fortnight the priapism persisted. There was irregular fever, the evening temperature averaging 100° F., the morning 98·6°. Benzol ♏5 in capsule was given daily. The spleen diminished slightly in size. Dr. Pierce Williams showed the case at the Royal Society of Medicine, and I am indebted to him for the notes up to this point.

On April 30th the patient was transferred to St. Mary Hospital. On admission the spleen was palpable 3 inch below and 1 inch to the right of the umbilicus. The inguin glands were hard but not enlarged, the axillary glands we not palpable. The superficial veins were easily seen. Th first of the series of blood counts done in this departmen gave figures: R.B.C., 1,656,000; Hb, 24 per cent.; C.I 0·72; W.B.C., 1,016,000 (see Table II.). Normoblasts wer present in the film.

During his stay in the hospital until August 8th, X ra treatments were given on the dates as in Table I. The fal in the number of white corpuscles is also shown. Th second table shows the changes in the percentage and tota number of the white cells in the differential count. O August 8th the patient was sent to a convalescent home fo six weeks. On his return he attended the out-patient department. On Oct. 1st his general condition was much improved. The spleen was much decreased in size and his blood count showed: R.B.C., 4,592,000; Hb, 64 per cent.; W.B.C., 82,000.

TABLE I. (Case 2).

Date in 1921.	X ray treatment. (Pastille dose.)	White cells per c mm.
May 1st	1 mm. AL 1/2 B.	1,016,000
,, 8th	—	1,055,000
,, 13th	1 mm. AL 1/2 B.	—
,, 23rd	3 mm. AL 4/5 B.	—
,, 27th	—	482,000
June 6th	—	508,000
,, 12th	3 mm. AL 4/5	—
July 1st	—	416,000
,, 3rd	3 mm. AL 4/5	—
,, 29th	,, ,, 4/5	—
Sept. 9th	,, ,, 4/5	—
Oct. 1st	—	82,000
,, 7th	3 mm. AL 4/5	—
,, 13th	—	9,000
Nov. 13th	3 mm AL 4/5	12,000
,, 24th	—	1,300
Dec. 15th	—	900

X ray treatments were continued. After that of Oct. 7th the patient complained of headache and vomited his food. After the next, headache and vomiting lasted four days. The vomiting later became persistent and the boy was readmitted on Dec. 11th. He was very wasted and pale. The skin over the abdomen was pigmented. There was some rigidity of the abdominal muscles. The liver was palpable about 2 inches below the costal margin, and the spleen was hard on palpation and reached a point half an inch above the inter-tubercular line. He was dyspnœic and very weak. On the 13th his temperature rose to 103° F. and remained high. The blood count done on the 15th gave the very low figures: R.B.C., 622,000; Hb, 12 per cent.; W.B.C., 900. He was given a blood transfusion, which improved his condition temporarily, but the next day his temperature rose again to 102° and remained high until he died on the 22nd.

Post-mortem Examination.—The body was very much wasted; there was extreme pallor of all the mucous membranes; the skin over the abdomen was pigmented—deeply on the right side; there were a few petechiæ over the shins and round the ankles. Heart showed numerous subpericardial hæmorrhages; pericardium contained 2 oz.

TABLE II. (Case 2).

Date in 1921.	Total R.B.C.	Hæmoglobin	Colour index.	Total W.B.C.	Myeloblasts.	Promyelocytes.	Myelocytes		Polymorphonuclear.			Lymphocytes		Hyalines.
							Neutrophile.	Eosinophile.	Neutrophile.	Eosinophile.	Basophile.	Small	Large	
May 1st	1,656,000	21%	0·72	1,016,000	0 0%	20,120 2%	251,000 25%	60,960 6%	548,640 54%	50,800 5%	81,280 8%	0 0%	0 0%	0 0%
,, 27th	2,605,000	44%	0·84	482,000	9,640 2%	24,100 5%	101,220 21%	14,460 3%	279,560 58%	19,280 4%	33,740 7%	0 0%	0 0%	0 0%
June 6th	2,836,000	36%	0·63	508,000	10,160 2%	10,160 2%	121,920 24%	15,240 3%	294,640 58%	25,400 5%	25,400 5%	5,080 1%	0 0%	0 0%
July 1st	2,448,000	44%	0·9	416,000	12,480 3%	0 0%	112,320 27%	8,320 2%	257,920 62%	16,640 4%	4,160 1%	4,160 1%	0 0%	0 0%
Oct. 1st	4,592,000	64%	0·7	82,000	1,640 2%	820 1%	13,120 16%	1,640 2%	56,580 69%	2,460 3%	4,920 6%	0 0%	0 0%	820 1%
,, 13th	—	—	—	9,000	0 0%	0 0%	855 9·5%	0 0%	6,637 73·75%	157 1·75%	515 5·75%	608 6·75%	135 1·5%	90 1%
Nov. 24th	2,984,000	45%	0·76	1,300	0 0%	0 0%	52 4%	0 0%	971 74·7%	0 0%	17 1·3%	173 13·3%	52 4%	35 2·7%
Dec. 15th	622,000	12%	1·0	900	0 0%	0 0%	18 2%	0 0%	360 40%	0 0%	0 0%	432 48%	72 8%	18 2%

of clear straw-coloured fluid; right auricle was much dilated; right ventricle slightly dilated; chambers contained a little tenacious clot; valves normal; myocardium showed very pronounced "tigering" in both ventricles, most in left. Microscopically there was patchy fatty degeneration of the muscle fibres, mostly under the endocardium; numerous small extravasations of blood under pericardium and in substance of myocardium; there were patches where the muscle-fibres, with poorly staining nuclei, stained deeply and uniformly with eosin, possibly areas of coagulation necrosis due to capillary thrombosis, such as is described in the bone marrow; aorta and blood-vessels normal; internal jugular and larger veins distended with blood. Lungs, pale, some œdema; a few small areas of hæmorrhage scattered through substance of lung; numerous sub-pleural hæmorrhagic spots. Microscopically, some areas showed hyaline thrombi in the blood-vessels, with areas of extravasation of blood into the alveoli, some recent, some presumably older, with hyaline change. Stomach showed some submucous hæmorrhages. Liver slightly enlarged; surface mottled; cut surface pale; sections showed central cells of lobules to contain much fat; there was no leucocytic infiltration; no free iron. Spleen weighed 275 gm.; firm; capsule thickened and opaque; cut surface increased fibrous tissue; no *Malpighian* corpuscles visible; pulp dark in colour. Microscopically, increase of fibrous tissue mainly round the small vessels with deposit of brown pigment containing free iron; blood spaces dilated; large phagocytic cells scattered in the sinuses, some loaded with iron-containing pigment. The pulp contained few cells, amongst which were only a few scattered myelocytes. Tonsils, enlarged; pus in crypts. Microscopically numerous areas having typical histological structure of bone marrow. Lymph glands, slight general enlargement. Microscopically normal, but containing a few scattered myelocytes; no areas comparable to marrow tissue found in tonsils. Bone marrow: that of ribs red in colour; that of femur a uniform pinkish colour throughout; tough and gelatinous in consistency. Microscopically showed profound changes; fine fibrosis throughout; only a few minute scattered islands of bone marrow cells; the scanty cells present in other parts are elongated cells, some containing free iron; in some areas thrombosis of the capillaries.

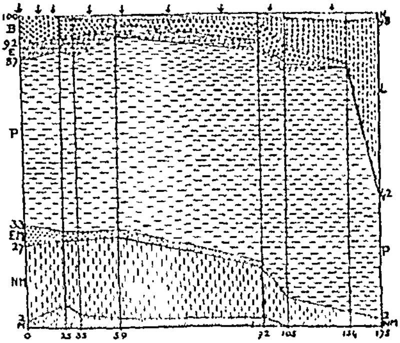

Diagram to show variations in differential count. Horizontal line represents time, numbers indicating days after beginning treatment. Vertical lines, numbers of various cells present in 100 cells. Arrows indicate dates of X ray treatments. M = myeloblasts and promyelocytes. NM = neutrophile myelocytes. EM = eosinophile myelocytes. P = polymorphonuclears. E = eosinophile polymorphs. B = basophile polymorphs. L = lymphocytes. H = hyalines.

This patient was originally admitted to St. Mary's Hospital under Sir William Willcox, and was later under the care of Dr. Reginald Miller, to both of whom I am indebted for permission to record the case.

Summary.

The blood examinations made during the earlier stages of this case leave no doubt that the boy was a typical case of splenomedullary leukæmia. At one time the improvement of his general condition was considerable (Oct. 1st, 1924). Later the blood picture changed rapidly. On Oct. 13th, unfortunately, no red blood count was done, but the white count was normal (9000) and the numbers of abnormal cells had fallen considerably. No counts after that of July 1st, 1924, showed any nucleated red corpuscles, which had been noted on previous occasions. The blood picture on Dec. 15th, 1924, was that of a severe aplastic anæmia, confirmed at autopsy.

The post-mortem findings in this case are remarkably like those reported by Whitcher. He, however, describes the bone marrow as being dark red, and microscopically containing numerous non-granular mononuclear cells. No fibrosis is described. Whitcher also describes some areas in the liver where the intercellular channels were distended into spaces which he presumes formerly contained myelocytes.

Spontaneous termination in anæmia of an aplastic type has not been described as taking place in cases of splenomedullary leukæmia. Both these cases seem to show that radiation either with X ray or radium may convert a case into aplastic anæmia. As is generally held, improvement takes place with the treatment, but it is only temporary and a relapse is to be expected. Exact details of the mode of termination of such cases after relapse are not often given. Whitcher's case shows a rapidly progressive aplastic anæmia. The two cases reported by Broadbent,[13] where the temporary improvement was followed by a further rise of the white cells and rapid termination, were regarded as a terminal acute lymphatic leukæmia. It seems probable that, as Letheby Tidy[14] pointed out, the abnormal cells were myeloblasts and that the termination was the recognised "myeloblastic" one. Such cases could be explained by supposing that the bone marrow was not so damaged as in the case now recorded, and could still respond to the unknown stimulus which produces the blood changes of splenomedullary leukæmia. On cessation of radiation the bone marrow did so respond.

It is obvious that more work needs to be done before the optimum dosage of radiation is fully known, before it is determined at what point the treatment should be suspended. The total number of white cells alone does not seem to be sufficient indication of the progress of treatment. The proportion of abnormal cells and any fall in the red count should be carefully taken into consideration.

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JEJUNOSTOMY IN ACUTE GENERAL PERITONITIS.

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Two years ago I published a paper in THE LANCET on The Cause of Death in Intestinal Obstruction.[1] That communication was an attempt on my part to give a résumé and analysis of the great amount of work which had been done on the subject. In endeavouring to draw conclusions I stated that the weight of both experimental and clinical evidence pointed strongly to intestinal toxæmia as being the chief factor in causing death; that this toxin was developed in the duodenum and to a lesser extent in the rest of the small intestine; and that, although it was not absorbed in the normal intestine, it was absorbed under the conditions which prevail in obstruction. In the same paper I also stated that I believed that death in acute septic peritonitis was not in most cases due to absorption of the products of the suppurative inflammation of the peritoneum but to intestinal toxæmia, secondary to paresis of the inflamed intestine, and, that if we could control this toxæmia there was a possibility of prolonging the patient's life for a sufficient time to allow the wonderful fighting properties of the peritoneum to deal with the infection. With this object in view I advocated the performance of a jejunostomy, by which means I believed that several apparently hopeless cases had been saved. Within the last two years I have employed this method in eight additional cases of peritonitis and I am fully satisfied that by its use some lives have been saved, and that in other cases convalescence has been rendered almost uneventful, although the conditions found at the operation were such as to lead one to expect a very anxious time.

Selection of Suitable Cases.

The class of case in which I would urge its use is the diffuse general suppurative peritonitis of the lower abdomen associated with appendicitis, tubal disease, and other septic conditions in the pelvis—the cases in which the intestines in the pelvis are acutely inflamed and the infection is already spreading upwards into the abdomen proper, so that, immediately on opening the abdomen, pus is seen lying between the congested coils of small intestine without limiting adhesions and, if a hand is passed down into the pelvis, a regular well of pus is found in the pouch of Douglas. In early cases the coils of intestine in the pelvis are at first dilated, but as the intensity of the inflammation increases they become collapsed and completely paralysed, while the coils higher up, where the inflammation is less acute, are dilated and paretic. When well established the condition is that so well described by Sampson Handley[2] as "ileus duplex"—a paralysis of the segment of pelvic colon and of the coils of small intestine which lie in the pelvis, with consequent dilatation of the proximal colon and upper ileum and jejunum. To deal with such a condition Sampson Handley advocates the performance of an ileo colostomy to drain the upper small intestine, and a cæcostomy to drain the colon, but he naturally hesitates to adopt such an extensive procedure until satisfied that without it the patient's prospects of recovery are negligible. In other words, at the primary operation he merely deals with the cause of the infection and provides drainage of the peritoneal cavity, and then, if the peritonitis advances, he operates again a few days later and carries out the double drainage operation. I would like to advocate the performance of a jejunostomy in the first instance and I believe that then the necessity for the more extensive procedure would not arise—the jejunostomy will drain the upper intestine and the paresis of the pelvic colon can usually be controlled by enemata and pituitrin. I think Victor Bonney[3] was the first to recommend jejunostomy for these cases, but Sampson Handley, in a recent paper,[4] condemns its use, stating not only that it entails the loss by the patient of great quantities of fluid, but that a second operation for its closure is necessary should the patient survive. These objectionable results would certainly follow simple jejunostomy by the old methods of suture of the intestine to the parietal peritoneum, but both are obviated entirely if the operation is carried out as described in my previous paper as follows:—

> "The operation I have performed is after the manner of a Witzel's gastrostomy—a No. 12 soft rubber catheter is inserted into the lumen of the intestine through a small puncture and fixed in position by a single catgut stitch, the next couple of inches of catheter are buried in the intestinal wall by a continuous in-folding stitch, and the proximal end is passed through a hole in the omentum, as described by Mayo,[5] before being brought out through the abdominal wall. To the end of the catheter a long tube is attached to drain into a bottle beside the bed."

At frequent intervals 6 to 10 oz. of bicarbonate of soda solution are run into the intestine, the end of the tube then being immediately depressed and replaced in the receptacle so that the toxic intestinal contents are diluted and their escape by siphonage encouraged. The outflow from this tube can be completely controlled and, as soon as it ceases to be the dark foul-smelling fluid characteristic of intestinal obstruction, the tube can be clamped in the intervals of being used as a means of introducing a soda and glucose solution. In a week or ten days the catgut stitch holding the catheter in situ is absorbed and the catheter is then removed—in no single instance in my experience has there been any subsequent escape of intestinal content, and thus no necessity for further operation.

Notes of Two Cases.

The following notes of two cases will serve to illustrate the types of cases in which I have employed the method, and will, I hope, demonstrate its utility. One case was almost desperate, whereas in the other I might describe the use of the method as prophylactic, as by it I believe the advance of the paretic distension of the gut was controlled, and the development of what may be termed a "vicious circle" obviated.

CASE 1.—A man, aged 60, was admitted to the Royal City of Dublin Hospital on Oct. 17th, 1924. He stated that he had been in failing health for some time; he had lost his appetite and suffered from marked constipation for some months; there had been no diarrhœa and he believed his motions had not contained blood or slime. Two weeks before admission he complained of a "soreness" in the left lower abdomen; this had gradually increased, culminating in an acute attack of pain three days previously. Since the onset of the acute pain he had vomited at frequent intervals, and could not retain even water taken by mouth; the vomit was dark and foul-smelling; his bowels had not moved for four days. Examination revealed a very grave state of affairs. His aspect was very bad, blue and pinched, and his general condition such that the clinical clerk described it in his notes as "collapsed, in extremis." The tongue was dry; temperature 98·8° F., pulse 110, but so weak and irregular that no reliance could be placed on the count. The abdomen was distended, distension being chiefly marked in the hypogastric region, while respiratory movement was confined to the upper abdomen; on palpation there was but slight tenderness and no rigidity in the upper abdomen, but both were marked below the umbilicus, and especially in the left iliac fossa; the presence of free fluid was easily demonstrated in the flanks. Rectal examination revealed the presence of marked tenderness and the characteristic "doughy" feel, associated with pelvic peritonitis; the rectum was empty. It was decided to operate as a forlorn hope. The abdomen was opened by a right paracentral incision below the umbilicus three-quarters of an hour after his admission. Immediately the peritoneum was incised foul-smelling pus escaped; everywhere in the lower abdomen the coils of intestine were acutely inflamed, dilated, and bathed in pus; there were no limiting adhesions. A hand was passed into the pelvis and a large quantity of very foul-smelling pus welled up; the appendix was examined and was obviously not the source of the infection, but on exploring the left iliac fossa a hard, irregular mass fixed to the brim of the pelvis was felt in the pelvic colon—a carcinoma or a diverticulitis which had perforated. A large tube was placed in the pelvis, both flanks were drained through stab wounds, and a left inguinal colostomy performed through a separate incision. A jejunostomy as above described was done into a dilated loop of the small intestine as high up as possible, and the patient returned to bed more dead than alive. His condition during the next three days was such that his death was hourly expected; his extremities were cold and clammy and the pulse at times imperceptible. The jejunostomy acted well; he received 8 oz. of soda bicarb. solution through it every two hours, and a great quantity of dark fluid drained away; vomiting ceased on the day following operation and fluids were give freely by the mouth from that time onwards. Hiccough persisted for several days after the vomiting had ceased. Fæces began to come from the colotomy opening on the third day. On the fourth the fluid from the jejunostomy tube became clear and, at the same time, his general condition showed a marked change for the better. The administration of the soda and glucose solution by the tube was continued for three more days and, in the intervals, the tube was clamped. His condition from the fourth day on gradually improved; the discharge from the drainage openings decreased and finally ceased. The jejunostomy tube was removed on the eighth day and no leakage of intestinal contents took place. Finally he was discharged on the thirty-first day in quite fair condition.

I have performed jejunostomy on two other almost identical cases of septic peritonitis, due to infection from tumours of the pelvic colon. One died and the other made a good recovery, although for the first two days following operation he was almost pulseless, intensely toxic, and apparently moribund.

CASE 2.—A boy, aged 16, was sent to the Royal City of Dublin Hospital on the evening of Jan. 6th, 1925, by Dr. P. Gavin of Moynalty. He stated that on the night of the 3rd he was seized with sudden severe pain in the right lower abdomen and vomited a great deal; the pain continued for two days but had eased off somewhat during the 24 hours preceding admission, being to some extent replaced by a "soreness" across the whole lower abdomen; he had vomited three or four times each day, and the bowels had not moved since the morning of the 3rd; there was some pain on micturition. On examination his aspect was moderately good, face flushed and anxious but not pinched; the tongue was furred and moist, temperature 102° F., pulse 112. The respirations were almost entirely thoracic; the lower abdomen was distended, the upper limit of distension being quite sharply marked at the level of the umbilicus; he was tender all across the hypogastrium, especially so in the right iliac fossa. Rectal examination confirmed the diagnosis of pelvic peritonitis and an operation was performed immediately through a right paracentral incision and revealed a diffuse purulent peritonitis of the lower abdomen. The coils of intestine in the pelvis were intensely congested and dilated, and lay in a bath of pus. The intensity of the congestion and the quantity of purulent exudate gradually diminished as the abdominal cavity proper was reached, so that the coils immediately underlying the umbilicus were dilated but not congested. A perforated pelvic appendix, gangrenous in its middle third, was removed; a large tube was placed in the pelvis and a jejunostomy performed into one of the dilated loops of the small gut, lying just above the level of the umbilicus. Instructions were given to place the patient in the Fowler position and to run six ounces of soda solution through the jejunostomy every four hours, the tube in the interval to to be left unclamped and draining into a bottle beside the bed. Rectal salines were also ordered. The conditions found at operation in this case were such that I gave a very guarded prognosis and anticipated a very stormy convalescence, so I was more than pleased next morning to find the lad looking well and to hear that he had not vomited since the operation. The tube was working well, a good quantity of dark fluid escaping; his temperature had fallen to 99° and pulse to 100. It is unnecessary to give details of the convalescence; suffice it to say that he steadily improved from day to day, the outflow from the tube becoming clear in 24 hours and the tube itself coming away on the seventh day, no fistula resulting. He finally made an excellent recovery although his discharge from hospital was delayed until the fortieth day owing to the development of a small secondary abscess in the right iliac fossa, which discharged through the scar of the original drainage opening.

Three other cases of diffuse peritonitis originating in the pelvis and extending into the abdomen proper were similarly treated and made good recoveries. In two the cause of infection was a gangrenous appendix, and in the other a rupture of a pyosalpinx. I have also employed jejunostomy in the following cases. (1) Pelvic peritonitis due to a gunshot wound traversing the pelvis and puncturing the rectum in two places. This man made a rapid recovery, the peritonitis not extending. (2) Acute intestinal obstruction by a band. This man was intensely toxic and great quantities of dark foul-smelling fluid drained from the tube for four days. After that time recovery was uneventful. (3) Acute pneumococcal peritonitis. This patient died from a general pneumococcic septicæmia.

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Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF ELECTRO-THERAPEUTICS.

A MEETING of this Section was held on April 17th, DR. STANLEY MELVILLE, the President, being in the chair.

The Organisation of a Light Department for Surgical Tuberculosis.

SIR HENRY GAUVAIN read a paper on the organisation and work of a light department in a surgical tuberculosis hospital. He said that though he had used heliotherapy for some years, it was only since the war that a light department had been established in the hospital of which he had charge at Alton, and that was owing to the munificence of Sir William Treloar. He explained that he meant by "light treatment," treatment by light produced artificially as opposed to sunlight; he objected to the term "artificial sunlight." Theories which had been advanced as to the biological action of light were contradictory, sometimes confusing. He was convinced as to the value of light in surgical tuberculosis, but this form of treatment was very expensive, as large amounts of current were consumed, the services of skilled electricians must be secured, experimental work must be done, numerous accessories purchased, and a staff of nurses specially trained must be maintained. An equipment for giving light treatment was urgently needed, especially for cases of lupus. At Alton there was already an admirable generating plant, and the resident engineer skilfully adapted the new plant without extra expense. Finality in this matter had not yet been reached, and he believed much that was important would be discovered in the near future, therefore room should be left for possible modifications. Accordingly the ward for this work was a wooden structure, placed quite near to the power-house, to save cost of cable, and risk of fire was reduced by covering floor and walls 4 feet high with asbestos. There were two cables, one to convey a current of 70 volts, the other one of 110 volts. He took as his model the Finsen Institute in Copenhagen, which he visited twice and for which he had unstinted praise. There the lamp used for general light baths and local treatment was the carbon arc lamp. Lupus remained the most common form of tuberculosis treated. A highly-educated woman came from the Copenhagen institution to Alton to instruct the nurses there, and remained six months. At Alton eight ambulant cases could be treated simultaneously by means of the 75-ampère carbon arc lamps, and there were two water-cooled carbon arc lamps for local treatment.

The Use of Ultra-Violet Rays.

Sir Henry Gauvain said he also made provision for testing and employing any other form of radiation which seemed to promise success, and much attention had been given to the subject of ultra-violet radiation. The value of this, especially in rickets, had been amply demonstrated; and it raised the bactericidal power of the blood. The tendency nowadays was to use, in increasing degree, the short rays of the spectrum, but many "artificial sun" lamps were rich in rays not to be found in the solar spectrum. He had used mercury-vapour, tungsten arc, iron arc, and other lamps, also numerous electrodes, and they were serviceable for certain local conditions, but in a general way for surgical tuberculosis they had not come up to his expectations. He preferred the Finsen lamps. Clinical experience still remained the most reliable guide. The tendency to employ short wave radiation indiscriminately was not without danger. In acute neuritis of undiscovered cause, however, these rays quickly produced a very striking relief.

On the physical side it was possible to produce an almost infinite variety of radiant energy, but there was still so much to learn concerning its biological effect that there was need of skilled laboratory workers in connexion with light departments. In such a department there must be complete and responsible supervision during the treatment; all the work was visible to the charge nurse, and there were no cubicles, though privacy was secured when certain areas of the body were being treated. At the conclusion of treatment the whole department was cleaned out, and all lamps, lenses, and compressors received careful attention. At the present time 28 patients were having arc treatment each day, and 56 persons had light baths every alternate day. Goggles were worn, each patient having his or her own. Water was drunk during the treatment. The exposure was half an hour for new patients, and was increased to a maximum of two and a half hours. It induced free perspiration, and at the conclusion the ambulant cases had a shower-bath and rub down. The patient's head was protected from the heat by asbestos masks. For local treatment the part concerned was first exsanguinated by means of compressors, and no further treatment of the area was carried out until the local reaction had subsided. Most of the patients had graduated seaside baths at Hayling Island, and the beneficial effect of this was very marked.

For surgical tuberculosis Sir Henry Gauvain regarded the light treatment as an accessory, the success depending on the skill with which it was blended with the other means. For this form of tuberculosis the air-cooled mercury-vapour and tungsten arc lamps were not so valuable as the carbon arc lamps, and their value diminished after a few applications. They had been found to be good for sinuses, suppurating and discharging glands, scrofuloderma, &c. The water-cooled iron arc lamp was good for local lesions, and it had the merit of being cheap. Infra-red radiations were of limited value, but in patients whose blood possessed high bactericidal power they hastened cure. Sir Henry Gauvain said he was now engaged in perfecting a lamp designed for giving light treatment to patients who could not be brought to the hospital. Some of the requirements were that the lamp should be readily portable, simple in application, and adaptable to the ordinary wall-plug for electrical supply. He said he felt grave misgivings as to the use of a powerful source of ultra-violet light in the hands of the inexperienced. Certain disease conditions derived greater benefit from one form than from others, and some only received the maximum help from both forms of radiation, supplemented by physical aids to cure. Work was now being done at Alton which, without the aid that the newly-installed department gave, could not have been done at all. He had frequently cut out portions of tissue which had been irradiated and shown that the tubercle bacilli in them were dead.

Selection of Apparatus for Producing Artificial Sunlight.

Dr. G. MURRAY LEVICK said the time had not yet arrived for laying down hard-and-fast rules on this subject, as experience was brief. "Artificial sunlight" should be understood to mean the application to the body of rays such as were found in sunlight, but not necessarily in the proportions occurring in nature. By using the mercury-vapour lamp with the long-ray lamp he had obtained better results over a large range of cases than by the use of the open arc lamp. He had successfully used the latter with carbons which were impregnated with nickel, especially for cases of general debility without apparent cause, neurasthenia, and chronic rheumatism. But the open arc lamp with carbon terminals did not give such good results in the case of rickety and tuberculous children as did the mercury-vapour combination, and the latter permitted of accurate dosage, an important matter, as elderly subjects with rheumatoid conditions showed an extreme sensitiveness to light, and experienced a reaction, as evidenced by aching pains, headache, and a slight rise of temperature. Recently there had been placed on the market self-exhausting tubes, and it was not yet known how long they would last. A 2000-candle power mercury tube sufficed for all general purposes. The chief faults were inaccessibility of the reflector and the difficulty of accurate focusing; he was designing an apparatus in which these would be overcome.

He had found that the red rays were of great value in promoting nutrition and the power of local repair, probably through local stimulation of the sympathetic nerves. These rays penetrated very deeply, and quickly promoted growth of muscles. Heat rays were interrupted by water. A disadvantage of the mercury-vapour lamp for general use was that, on account of the intensity of the radiation, it required skilful handling. It was most important that the patient should be stationary during the application, so as to preserve a uniform focus. He pleaded for exactitude in the administration of radiation. He agreed that the arrangement, organisation, and working of the Copenhagen institution were masterly.

Dr. P. R. PEACOCK referred to the work which had been done by Prof. Russ and himself on the physics of ultra-violet irradiation. He said that pigmentation frequently resulted from exposure of the skin to the rays. It was agreed that there were unaccountable variations in the response of different people when exposed to the same kind of treatment, some pigmenting, others merely freckling. Clear skins fluoresced better than did dark ones. Certain parts of the body were fluorescent; sweat and blood were non-fluorescent. Sebum was the most brilliantly fluorescent, and melanin absorbed the whole visible spectrum. From the ultra-violet point of view, fluorescence seemed to be a protective phenomenon. Skin which had been treated with vaseline withstood three and a half times the radiation of normal skin before showing reaction. Pigmentation occurred only as a result of considerable exposure, and it might be taken as an indication that fluorescence had failed to protect the tissue. Hence if application of the treatment could be made without producing pigmentation the effect might be much better, as pigmentation protected the skin against the action of the very rays which it was sought to influence it by.

MANCHESTER MEDICAL SOCIETY.

A MEETING of this Society was held on April 1st, Prof. G. R. MURRAY, the President, being in the chair.

Dr. D. E. CORE opened a discussion on

ENCEPHALITIS LETHARGICA.

He began by describing a typical case of average severity in a man of 24, and then dealt with certain symptoms in detail. As regards the diagnosis of encephalitis lethargica, he said it was important to remember that often enough the condition escaped recognition as an illness by the patient and his friends; it might only be revealed as such in the light of the after-course. The idea of establishing a diagnostic scheme based upon symptoms was in his mind untenable, and the present-day tendency to do so was responsible for the number of erroneous diagnoses. Apart, however, from objective signs of implication of the nervous system, he had been increasingly impressed by the interesting relationship between the symptoms and the patient's consciousness. In normal life there was a reasonably close parallelism between objective behaviour and the personality of the individual; a man who acted in an uncontrolled way usually showed signs of mental uncontrol; one who seemed to be profoundly unconscious was as a rule unconscious; and a delirious patient was not in general aware of his surroundings. In encephalitis lethargica, however, this association did not appear to obtain. The most restless and uncontrolled patient was quite commonly capable of giving a remarkably clear and logical account of his sensations without any evidence of psychical uncontrol; it was notorious that the patient somnolent to the point of coma was not only often, but was usually able to answer questions and give information demanding considerable concentration; and the same phenomena were to be observed in the delirious patients. Furthermore, the ability to memorise subsequently events occurring in their environment at such times was considerable. In other words, instead of the normal association between the psychical state and the somatic symptoms, there was a dissociation; a dissociation which was anatomical rather than psychical and which, in his mind, was the most characteristic feature of the disease under discussion. The same principle was at work in the frank emotional uncontrol that was liable to affect children as an after-state and the somatic uncontrol in the young adult with symptomatic paralysis agitans. From the standpoint of diagnosis this dissociation was, in his opinion, of greater value than objective signs of cerebro-spinal implications.

Dr. W. ST. CLAIR MCCLURE said that encephalitis lethargica was an infectious disease spread by "carriers." The organism responsible was universally distributed, but happily the majority of people were immune to its attack. All ages were liable to attack, but the incidence fell specially heavily between the ages of 10 and 20 years. Males and females were about equally attacked, and there was no special preponderance of cases in any one particular occupation. Bad environment appeared to predispose to an attack. In a series of 224 cases in 1921, 20 per cent. died, and after 12 months 20 per cent. had apparently recovered and 60 per cent. had residua of some kind, two-thirds of which were of a Parkinsonian character. Similar figures for 50 cases which occurred in Manchester in 1920–21 were: Mortality-rate 50 per cent., recovery-rate (three years after onset) 14 per cent., and incapacity-rate 30 per cent. Taking into consideration wrong diagnoses and non-recognised cases, 15 to 20 per cent. probably represented the recovery-rate, though it differed in different epidemics. The prognosis in any individual case was guess-work, but it was a hopeful thing to know that complete recovery was possible in cases which at first appeared hopeless, and it was to be noted that all who did not recover were not totally incapacitated. In many the disease process came to a standstill and a useful and more or less happy existence was possible.

Hiccup.

Hiccup might occur as one of the symptoms of encephalitis lethargica, and one must suppose that it might be the one and only sign of the disease. Epidemics of hiccup and encephalitis, however, did not as a rule run concurrently. In Manchester, in 1924, a hiccup epidemic preceded the encephalitis epidemic. In December, 1923, and January, 1924 there was a generalised epidemic of hiccup in the city. The attacks consisted of persistent hiccup lasting three to ten days, unaccompanied in the majority of cases by other symptoms. Some few exhibited drowsiness. The sufferers invariably recovered without sequelæ, and inquiry 12 months after had not so far resulted in the discovery of any post-encephalitis signs amongst them. In the investigation of cases of encephalitis lethargica special inquiry was made amongst 1200 contacts for a history of hiccup. Only two were discovered. The households attacked by encephalitis lethargica were not those attacked by hiccup. Amongst the encephalitis lethargica patients hiccup was one of the symptoms in about 3 per cent. There was therefore no evidence favouring the view that the two diseases were associated, though such a possibility was not excluded. Influenzal cases had not given rise to encephalitis lethargica, nor had cases of the latter disease given rise to influenza. A study of the epidemic waves of influenza and encephalitis in Manchester showed that there was no correlation in point of time between the two diseases and provided no evidence in support of the contention that they were associated in any way one with the other.

Pathological Aspects.

Prof. J. H. DIBLE said that, speaking as one who saw the disease from the pathological side, he was in full agreement with the previous speakers as to the difficulties in clinical diagnosis. The first three cases in which he was called upon to do post-mortems turned out to be tuberculous meningitis. He wished to draw the attention of the Society to the experimental pathology of the disease. At the onset of its epidemic phase, analogy with poliomyelitis suggested that it might be transmissible to apes and investigated upon the lines so successfully followed by Flexner and his associated workers in the latter disease. Early experiments, however, particularly of McIntosh and Turnbull in this country, failed to infect these animals, and it was not until 1919 that Strauss, Hirschfeld, and Loewe reported successes from America. These workers then reported further successes with nasopharyngeal washings and cerebro-spinal fluid, as well as brain material, as the source of the infecting agent, and they claimed that the rabbit and not the monkey was the animal of choice for this work. Early in 1920 Levaditi and Harrier claimed to have transmitted the disease to rabbits, and about the same time McIntosh published an account of similar successful inoculation of monkeys in series, and from monkey to rabbit. The speaker himself had since 1920 been attempting to convey the disease to the lower animals, and gave details of many attempts, using material derived from ten cases of the disease, to transmit the infection to rabbits. These invariably failed whatever type of material was used as inoculum and by whatever route the inoculation was made. Attention was drawn to the existence of two schools, the one claiming that production of the disease in animals was readily enough accomplished to be used as a diagnostic measure with the cerebro-spinal fluid, whilst the other school, of whom Levaditi was the protagonist, claimed that the disease was definitely inoculable but only with difficulty, and that success was rare. Prof. Dible's own experiences had been entirely negative. Recently Flexner, whose authority in this type of work was very great, had published the results of a very large series of attempts which he had made in conjunction with Amos. All material from cases of encephalitis had failed to infect; a positive result was obtained in one instance, but this was with cerebro-spinal fluid from a case of cerebral syphilis and not one of encephalitis at all. Such results called into question again the validity of all published positive results. The matter was one of great difficulty, and complicated in many ways, one of the most confusing questions being the relationship of the encephalitis produced in animals by certain workers to that which the herpetic virus of Grütner was capable of setting up. Much more work was required before the matter could be regarded as settled, but in the opinion of the speaker the claim to have transmitted the disease to animals was as yet unsubstantiated.

Dr. C. J. C. EARL spoke of the cases under his care in Monsall Hospital. He agreed with the previous speakers as to the difficulty of diagnosis. Out of 16 cases admitted as encephalitis lethargica 11 were proved to be other conditions, including tuberculous meningitis, brain abscess, and brain tumour. Some of these cases were impossible to diagnose on physical examination alone. He had seen the typical dissociation of which Dr. Core had spoken, in a case of a cerebral abscess situated in the region of the basal ganglia. One case was admitted certified as mumps which proved to be encephalitis with parotitis. In three out of five of the more acute cases admitted herpes labialis was present. In one of these cases the sister of the ward also developed herpes labialis though without any nervous signs. He would be interested to know whether she should be regarded as suffering from the disease in a latent form or, on the other hand, as immune to it. One of the acute cases had shown excitability to a marked degree. He mentioned one case of inversion of sleep rhythm. This case—a child—was more intelligent and cunning during the night than in the day time. He also wrote a much clearer hand at night.

Reviews and Notices of Books.

Chronic Epidemic Encephalitis.

By AUGUST WIMMER, M.D. With Preface by Sir F. W. MOTT, K.B.E., M.D., F.R.C.P. Lond., F.R.S. London: William Heinemann (Medical Books), Ltd. 1924. Pp. 335. 21s.

P. M. Latham, in his lectures on subjects connected with clinical medicine, wrote: "In chronic disease we see only what it has done, not what it is doing; in acute disease we see both." Acute epidemic encephalitis is showing us what it has done in its chronic manifestations. It is now apparent that the acute symptoms of the disease may (1) subside altogether, (2) merge into a chronic form, or (3) chronic symptoms may supervene after a period of remission. It should be added that in a large proportion of cases the acute attack of encephalitis passes unrecognised or is concealed under the term of "influenza" or "febricula." Transient diplopia is frequently associated with the acute stage.

Dr. Wimmer, who is professor of psychiatry in Copenhagen University, was, he tells us, initiated into English neuropathology by Horsley and Beevor. He has produced an admirable book on the chronic manifestations of epidemic encephalitis, with examples of clinical cases that have been under his observation. The work on this subject, owing to the comparatively recent recognition of epidemic encephalitis, is of necessity incomplete; it is no disparagement to state that in its present form his book must be regarded as an interim report upon the chronicity of epidemic encephalitis. The pathology of the chronic disease is not fully worked out; the few inoculation experiments made on rabbits are noted with proper diffidence, and as regards course and prognosis of the malady, the author states that no reliable forecast can be given in the concrete case, the prognosis being mostly guess-work. Until the lapse of time has allowed these matters to be adequately valued, the neurologist will find Prof. Wimmer's work a useful guide and aid in checking his own studies of clinical cases.

Prof. Wimmer considers the chronic forms of epidemic encephalitis under several heads. The account of psychotic disturbances agrees closely with the British and French descriptions. Stress is laid upon the changes in moral character and conduct displayed by children, upon the nocturnal type of disturbance, and upon the well-recognised fact that it is rare to find such coarse moral deterioration in adults as in youths and children. Disorders of sleep in both children and adults, including the troublesome insomnia, are described. Under the classification of vegetative symptoms, such phenomena as salivation, general or localised perspiration, vasomotor disturbances, obesity, and emaciation are noted. The author draws attention to the oscillations in temperature that are seen occasionally in the chronic forms of disease; he advises that the morning and evening temperatures should be taken daily. The main features of chronic encephalitic Parkinsonism, "paralysis agitans sine agitatione," are given. Prof. Wimmer is unable to dismiss the supposition advanced by Souques, Netter, and others that the "classic" paralysis agitans may be, often or perhaps usually is, of an encephalitic origin. It would be interesting to learn whether symptomatic paralysis agitans is of such frequent occurrence in Denmark as Souques, Naville, Bing and Staehelin, and others find it to be on the Continent.

A large section of the book is devoted to intermediary types. Under this heading Prof. Wimmer has grouped a number of clinical manifestations. It is interesting to note, having regard to the frequency of involvement of the ocular nerves in the 1918 epidemic, that the author finds while in some few cases the eye symptoms of the initial stage may persist during the further course of the encephalitis, they will, as a rule, disappear. Involvement of the optic nerve was detected in seven cases, which is exceptional. Some patients relapsed into lethargy. Several cases presenting epileptic seizures are described; it is possible that some, if not all, of these were examples of true idiopathic epilepsy; indeed, after reading this part of the book we are left with an uneasy impression that Prof. Wimmer in his search for intermediary types has thrown his net a little too wide. Extra-pyramidal hyperkinesia, under which term the author includes tremors, myoclonus, choreiform movements, and athetoid (torsion) movements, completes the classification of chronic epidemic encephalitis. There are interesting chapters on diagnosis, pathogenesis, and pathophysiological mechanisms. The author inclines to the view that the chronic manifestations of epidemic encephalitis are due to persistence of the causal virus in the human organism.

Prof. Wimmer writes in excellent English and his book is well illustrated by photographs and photomicrographs.

Diseases of the Nose, Throat, and Ear.

Fifth edition. By E. B. GLEASON, M.D., LL.D., Professor of Otology, Medico-Chirurgical Graduate School, University of Pennsylvania. London and Philadelphia: W. B. Saunders Company. 1924. Pp. 660. 20s.

THIS text-book, which is of the type intended for students and general practitioners, is full of valuable instruction and gives evidence of the author's wide practical experience. The appendix on formulæ contains an unusual feature, a full description of the action and method of use of the more important drugs, which will be found very useful. The section on diseases of the ear is particularly thorough and good. In some places the work suffers from a lack of orderly arrangement; for instance, otosclerosis is so mixed up with middle-ear catarrh that a clear picture of the disease and its treatment is unobtainable. More space could be gained by the omission of some operations which are now little used; for instance, a full account is given of the operation of severing the incudo-stapedial articulation, and mobilising or extracting the stapes, of which the author says that he performed it a number of times some years ago. The description of paralyses of the larynx fails to give a clear idea of their ætiology, so valuable in the diagnosis of various diseases, and does not note the fundamental distinction between the functional adductor paralyses and those resulting from organic lesions of the nerve-tract. Indeed, adductor paralysis of one vocal cord is described, with no hint that it is uncommon; and of Semon's law it is only said that "in all progressive lesions of the centres or trunks of motor laryngeal nerves the abductors are more frequently affected than the adductors," surely a very insufficient statement of the case. The illustrations, on the whole, are not worthy of the text.

Collected Papers.

Published Papers by Members of the Staff of the Middlesex Hospital Medical School, 1923–24.
Collected Papers of the Department of Physiology, University College, London. Vol. XXII. 1924.

THE collection and publication of papers by groups of workers in the same institution is undoubtedly a valuable method of recording research work, but the reproduction of the essays is attended with one drawback, only to be avoided by expense that would not be warranted. In both of these volumes reprints of widely different sizes have been bound together, with curious heterogeneous results; some of the reprints have required awkward cutting or folding; the association of coloured covers of individual papers, often of contrasting and violent hue, does not please the eye, and indexing has proved impossible.

The material in both these heterogeneous volumes is really valuable, records from the Middlesex Hospital of important work on the effects of radium and X rays on cancer being especially noticeable. The measurement of radiations on the one hand and their effects on general metabolism on the other form the subject of several communications. Biochemical investigations on the toxæmias of pregnancy, certain aspects of the preparation of insulin, and interesting work carried out on dental caries, with particular reference to the *Bacillus acidophilus odontolyticus*, are other examples of recent work emanating from this hospital.

Of the collected papers of the physiological department of University College an assortment of reports of researches on questions of muscular activity forms a large part, and includes the Nobel lecture of 1923 by Prof. A. V. Hill. The other main interest lies in the work on vitamins, especially the fat-soluble factor; investigations into the properties of cod-liver oil and into the production of rickets in certain animals such as cows and pigs form an important part of the work carried out during the past year. The scientific value of the papers published in both these volumes need not be emphasised, for it is unquestioned. Several of them we were privileged to publish in our columns, and on others we have had occasion to comment on their appearance in special journals. Their value as permanent records of the achievements over a given period of the staff of an institution would be so much enhanced by better format that it is impossible not to regret their appearance.

The orderly volumes issued by certain institutions across the Atlantic form a striking contrast to these publications; they are doubtless far more costly.

PÆDIATRICS.

The Practice of Pediatrics. Third edition. By C. G. KERLEY and G. W. GRAVES. London and Philadelphia: W. B. Saunders Company. 1924. Pp. 922. 45*s*.

THIS volume is the outcome of a thorough revision of Prof. Kerley's well-known text-book by the author in collaboration with Dr. G. W. Graves. The amount of new material which it contains is large in proportion to the very moderate increase in size, owing to the elimination of a number of the older articles. The new edition presents a comprehensive survey of the subject, and includes the infectious fevers and also many of the ailments of childhood which are commonly classed as surgical.

The chapters concerned with the infant have been revised and enlarged; they contain a wealth of sound advice as to general management, but the methods of milk modification which are recommended have the drawback of being somewhat complicated, and on the whole more suitable for an institution than for the practitioner. Night feeding is advocated during the first three months, and the addition of cereals from the fifth month. The statement "that starch may be digested by the youngest and most marasmic infant has been proved" may be strictly correct and yet be a source of danger if adopted too freely as a principle in infant feeding.

Considerable addition has been made to the section on gastro-intestinal ailments, which now occupies a large proportion of the book. The authors attach great importance to developmental abnormalities of the alimentary tract in the production of malnutrition and disease, and illustrate their description of them by a series of excellent radiograms. The principles of dietetics in the years following infancy are presented clearly; excessive consumption of milk is regarded as the most frequent source of digestive troubles during these years. Fewer changes have been made in the chapters on respiratory diseases, but the section on asthma has been re-written, and includes an account of protein sensitisation. The authors have not modified their view of the treatment of empyema, and adhere to the opinion that aspiration is never to be looked upon as a substitute for incision. Among other additions will be found a description of encephalitis lethargica; the sequelæ hardly receive due recognition of their importance to pædiatrics, being summarised in a few lines without any reference to disturbances of sleep. An article entitled the Suboxidation Syndrome contains an interesting review of a group of symptoms corresponding fairly closely to those which are associated with the term vagotonia.

The appearance of the new edition brings this work fully up to date; it is clearly written and well indexed, and is likely to increase the popularity of the former editions.

Safeguarding Children's Nerves. By J. J. WALSH, M.D., Professor of Physiological Psychology, Cathedral College, New York; and J. A. FOOTE, M.D., Professor of Diseases of Children, Georgetown University Medical School. London: J. B. Lippincott Company. Pp. 272. $2.00 (9*s*.).

THE authors of this book have attempted to provide parents and others who are interested in child welfare with a manual of child management directed particularly to the production of a stable nervous system. In a large measure they have succeeded; the book is easily intelligible and free from fads, and contains much sound advice presented in a homely and convincing style. Fresh air, exercise, and facilities for spontaneous play are stressed throughout the work as the fundamental requirements of a healthy environment; the failure to provide them, and their replacement by unsuitable occupations—the "menace of the movies" in particular—are regarded as the most frequent causes of nervous instability in the child. The authors' attitude towards discipline is balanced and reasonable; while opposed to unnecessary restrictions and "don'ts" they deprecate the present tendency to dispense with penalties, and consider that corporal punishment calmly administered is frequently preferable to any of its substitutes.

The parts of the book which deal with the attainment of a healthy environment are sound and helpful, but on the more controversial ground of causation the authors may be accused of overstating their case. The chapter entitled the Bogey of Heredity does not add to the value of the book, and is likely to mislead many of its readers. The careful research of Dugdale and Goddard into family histories is referred to with scant respect, and the impression is given that their conclusions are discredited. Arguments based on Mendelian laws are brought forward which may be applicable to the transmission of mental defect, but it is not made clear that there is no evidence of their application to the transmission of neurotic tendencies, with which the work is principally concerned. The chapter on defective children is admirable, and contains most valuable advice, which is too seldom given to parents, on the serious effects of retaining these children in the home.

Essentials of Infant Feeding. By E. A. BARTON, Medical Officer to the Child Welfare Department, University College Hospital. London: H. K. Lewis and Co. 1925. Pp. 80. 3*s*. 6*d*.

THE object of this little book is to initiate the student into the technique of an infant clinic. The material is highly condensed, and is rightly presented in a somewhat dogmatic form. It falls into three divisions, dealing with breast-feeding, milk, and artificial feeding. Dr. Barton is to be congratulated on having achieved not only lucidity, but simplicity, in the last two sections of the book, and the student will be able to obtain from it a clear idea of the rationale of infant feeding, without being bewildered by the elaborate formulæ by which this subject is so often complicated. The extent to which he should put his trust in calories is discussed in an easily intelligible manner, as are many of the other problems in which theory and practice require some mutual adjustment. This book should fulfil admirably the purpose for which it was written.

ULTRA-VIOLET RAYS IN THE TREATMENT AND CURE OF DISEASE.

Second edition. By PERCY HALL, M.R.C.S. Eng., L.R.C.P. Lond. With introductions by Sir HENRY GAUVAIN, M.A., M.D., M.C. Camb., and LEONARD E. HILL, M.B. Lond., F.R.S. London: William Heinemann (Medical Books), Ltd. 1925. Pp. 114. *7s. 6d.*

WE have ample proof that artificial light rays supply us with an admirable weapon in so far as the fight against surgical tuberculosis, lupus, and rickets is concerned. Many lamps have been placed on the market, some of which do and some of which do not give off ultra-violet rays. Unfortunately, many inaccurate and misleading impressions seem to have become settled in the lay mind. Among others, that treatment by such lamps is a simple and harmless proceeding, whereas it requires the supervision and guidance of an expert. It is to remove these false impressions that this book has been published, and the author's testimony is supported by introductions from Sir Henry Gauvain and Dr. Leonard Hill, who have done so much of the pioneer work on this subject in this country.

Dr. Hall has had much practical knowledge of the uses of lamps for artificial light treatment and gives a general survey of his results in treatment of various diseases. His book has been so well received that a second edition has appeared seven months after the first. The results obtained by Dr. Hall in treatment of such various maladies as rheumatoid arthritis, gout, osteo-arthritis, lumbago, sciatica, neurasthenia, pulmonary tuberculosis, chronic dyspepsia, and high blood pressure are very interesting. He is careful to point out that he uses artificial light rays merely as an adjuvant. In fact, he would appear to make as much use of diathermy as he does of ultra-violet rays. No doubt, although he does not say so, he has used rest, diet, change of scene, and other valuable factors in treatment.

We all know that those who can afford it pay yearly visits to sunny climes for the alleviation of such diseases as Dr. Hall enumerates. This, in itself, is some confirmation of the claims that he puts forward. Those remaining at home are robbed of much of the sunlight there might be in fine weather in winter by the smoke nuisance and the prevalence of fog. It will be a boon if artificial light rays, properly and skilfully controlled, prove to be a substitute for the sun during the winter darkness.

TEXT-BOOK OF OPHTHALMOLOGY.

Eighth edition, revised. By Hofrat ERNST FUCHS, former Professor of Ophthalmology in the University of Vienna. Authorised translation from the twelfth German edition, with numerous additions by ALEXANDER DUANE, M.D., Surgeon Emeritus, Knapp Memorial Hospital, New York. London: J. B. Lippincott Company. 1925. With 155 illustrations. Pp. 997. 42*s.*

THIS is practically the same book as the seventh edition, published in 1923. So slight indeed are the alterations that the paging is unaltered, and the index to the seventh edition serves equaly well for the eighth. There are a few additions of small importance and some new illustrations, while some of the old ones have been redrawn. Thus the diagram of the nerves and centres constituting the motor apparatus of the eye is elaborated so as to include the cortical motor centres and the labyrinth of the ear. In the section dealing with operations an improved method of blepharoplasty for the lower lid is described, but unfortunately, owing to a misprint, the description is wanting in lucidity. Perhaps the most notable addition is the recognition of recession as an essential part of the operation of tenotomy of an internal rectus. Without this or some equivalent procedure the operation is only too likely to cause a divergence, if not as an immediate result, at some later period.

The continual demand for this book, one of the best known of the larger ophthalmological text-books, is a proof of its popularity on both sides of the Atlantic.

JOURNALS.

JOURNAL OF INDUSTRIAL HYGIENE, January, 1925.—In this issue the Relation of Organic Dust to Pneumonoconiosis is discussed by H. R. M. Landis. The author points out that a mistake is made when the well-known damage caused by inhaling inorganic dusts, notably silica, is extended to organic dusts. No evidence exists to condemn organic dusts. He obtained autopsy protocols on 50 persons who had never followed any other occupation than that of textile workers; in no case were there changes in the lungs comparable to those noted from exposure to inorganic dust. The findings and also the causes of death differed definitely from those seen, for instance, in the pottery industries. He concludes that organic dust has no power to establish the condition known as pneumonoconiosis. At the same time he allows that some organic dust gives rise to protein intoxication, such as asthma and threshers' fever.—An article of unusual interest is contributed from Moscow by I. Guelman on Industrial Poisoning by Arseniuretted Hydrogen. It is based on the occurrence of 12 cases treated at the Moscow Institute for Investigation of Occupational Diseases. Detailed observations are given, and the author shows reasons for holding that poisoning by arsine acts primarily and mainly by destroying and damaging red corpuscles; by liberating hæmoglobin and so causing hæmoglobinæmia; and from a consequent myelogenous reaction. The symptoms observed are due to these alterations in the blood interfering with the normal function of various organs. Thus jaundice and hæmoglobinuria follow from the hæmoglobinæmia, while the function of the liver is overstrained by the same condition. "The course of the disease is a convulsive struggle of the system to free itself of this ballast." Arsine passes through the alveoli of the lungs without damaging the cells; nor is there evidence that other cells except the erythrocytes are in any way damaged. When once the blood condition is remedied, the different organs recover entirely. The article is not only of interest in itself, but is an indication of the good work which is being done at industrial clinics in Russia.—J. A. Myers deals with the vital capacity of the lungs and its practical application. He presents a useful and well-written summary of work done by other observers on this subject, and also gives a valuable bibliography.

February, 1925: The anatomical distribution of occupational cancers is dealt with by E. L. Kennaway, who gives valuable information as to the occurrence of cancer of the skin due to coal-tar products in various occupations, such as those of chimney-sweeps and shale-oil workers. The author gives special information obtained from the Registrar-General as to the distribution of cases of cancer of the skin in England and Wales. He concludes that cancer due to pitch and soot shows a considerable difference in anatomical distribution. Among pitch workers it occurs upon the head and neck, the cheek, lip, and eyelid, while soot in chimney-sweeps only affects the scrotum. In mule-spinners again, where oil is the offending material, the scrotum shows especial liability. Aniline workers are affected in the bladder. The author has made an intensive study of cases reported in literature, as well as a careful statistical presentation of all information he was able to obtain. The article is one of considerable importance.

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See also page 20

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THE LANCET.

LONDON: SATURDAY, APRIL 25, 1925.

THE PROBLEM OF THE MYOPIC CHILD.

IN his recently published book, "School Vision and the Myopic Scholar,"[1] Dr. JAMES KERR draws attention to an educational problem the solution of which has only as yet been just begun. We have blind schools for the "educationally blind," and in London we have "myopic schools" or "sight-saving classes" for high myopes and other children who, although they are certainly not blind, suffer from such defects of sight as render them obviously unfitted for the ordinary school routine. What we have not at present, either in London or elsewhere, is special provision for that large percentage of children, most of them low myopes, whose sight is in danger of being made worse as the direct consequence of the close application to books expected of them during their school years. Dr. KERR, who for many years organised the work of medical inspection in the London elementary schools, tells us that there are about 2000 children in London requiring education in the existing myope classes, but there are at least ten times that number who would benefit visually by a simpler sight-saving education than is afforded by any arrangements at present in force. The great majority of these are myopes of a moderate degree with a tendency for the myopia to increase under unfavourable conditions. The importance of this is shown by Mr. N. BISHOP HARMAN'S statistics,[2] proving that in later life myopes are liable to "failure in work" in direct proportion to the degree of their myopia, those engaged in clerical or other forms of close work being always far more subject to breakdowns than those of a similar degree of myopia not engaged in close work. What is not sufficiently realised is that the danger of myopia in childhood begins with comparatively low degrees. "Any child of 11 to 12 years of age," says Dr. KERR, "with myopia equal to four dioptres or more is likely to be harmed by further academic work in the sense of reading or writing, or fine work like drawing or sewing. These particular children are often precocious intellectually. They have gained a scholarship, their ages average 11½ years, and they must stay at school till 14 at the earliest; they have probably attained Standard VII., hence to remain at the primary school is merely marking time. On the other hand, they cannot be regarded as blind or semi-blind, and the myope schools are probably below their standard of scholarship."

What, then, is to be done with regard to the education of these children? As an immediate measure of protection, says Dr. KERR, every child with two dioptres of myopia by the age of 11 should be put under half-yearly reports, partly for safety and partly for parental education, and with —3 D. or more should be rejected for scholarships. Instructions to the teachers should distinguish between the slightly affected cases—"children for easy treatment"—who may be permitted to continue their studies under certain restrictions, the most important of which is the prohibition of all home-lessons—and those whose cases are more serious who should be recommended for oral teaching only. What is desired is an extension of the present system of myope or "sight-saving" classes to include as many as from 8 to 10 per cent. of the whole number of children in the school. In these classes the use of books, pens, paper, pencils, and slates of any kind is prohibited, and instead each child has a large blackboard on which he writes with chalk. On the other hand, for all lessons that can be learned by listening to the teacher the children in the myope class go into the ordinary school. A speciality is made of various forms of handicraft and most of the myopes are able to join with the other children in learning to dance and drill, though in the case of myopes exercises involving holding the breath, such as diving and swimming under water, or the "tug-of-war" are to be avoided. With regard to the less serious cases, Dr. KERR'S proposals will appear to some to be unnecessarily drastic. It may be true, as he says, that 50 per cent. of the present "standard" work is of scanty permanent life value; it may at least be true for the majority of the children, but to cut off such a large proportion of children as is proposed from all books might certainly bear hardly upon some, and Dr. KERR himself confesses that many of the best pupils in the present myope schools are almost marking time for the last two or three years of school life. The remedy appears to be, on the one hand, the establishment of classes for myopes in secondary schools, and, on the other, a careful selection of the low myopes needing special teaching. Would it not be permissible, for instance, to concede that any whose myopia was shown by medical inspection not to be increasing after, say, a year's probation might be restored to the book-reading classes? Such a proviso might make the proposed regulations more easy of acceptance both by teachers and parents, and, we may add, by ratepayers, for we must not forget that any extension of special classes must involve additional expense.

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DETERMINATION OF SEX.

THE mysteries of sex have a great fascination for the human mind, whether this be in the form of the natural or prurient curiosity of youth, the more anxious desire for information of a responsible age, or the efforts of the biologist to understand their bearings in natural law and evolutionary progress. Our daily journals have of late been regaling their readers with semi-bowdlerised versions of recently expressed views on the subject, from which it would appear that women may not only "have children at their desire," but—a matter about which the Psalmist maintains a modest silence—may have them, to order, of any sex that happens to suit their particular requirements of the moment. Such, at least, seems to be the physiological Utopia whose coming is dazzling the anticipatory imaginations of the general public. Fallacious theories of sex-determination, on which ineffective practice rested, have not been unknown in medical history, but the theory which is *sur le tapis* at present is said to be new, true, and therefore worthy of credence. We do not wish to throw dark doubt or suspicion on the simple faith that lies behind this claim, or to do more than suggest that it should be received with caution. So far as novelty is concerned, the views published a good many years ago by Dr. RUMLEY DAWSON (with a second edition in 1917) seem to be of an essentially similar nature: he was, we believe, the first to suggest that the sex of a child depends on the maternal ovaries, discharging their ova alternately, and that the father consequently has about as much or as little to do with the result as has the maker of a match with the type and violence of the explosion following its use

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[1] G. Allen and Unwin, Ltd. 5s.

[2] THE LANCET, 1922, ii., 914.

So far as concerns the association of male and female with the right and left sides respectively, the assumption of connexion is at least as old as Hippocrates, and perhaps as old as the hills, and is a general belief in some form or another among all nations and peoples. Mankind, in all these ages, has had large experience of childbirth and its accompaniments, and the very persistence and universality of the belief would, apart from other things, tend to induce hesitation in lightly discarding it, while the inherent improbabilities of alternate action of the ovaries do not seem to be great or in any way insurmountable; but, even if these beliefs turn out to be in some or any way justified, it is very probable that they would have to be viewed in the light of a third condition which is gaining increasing weight with the progress of investigation. We refer to the sex difference in the chromosome content of the gonocyte nucleus. Many of our readers are, no doubt, aware that there is a sexual variation in chromosome number, in which certain elements, known as heterochromosomes, do not behave like the other chromosomes during maturation of the sex cell; experiments have shown that it is these elements which are intimately concerned with the production of the sexes. Such cytological observations are, of course, of a highly technical sort, and have to be proved and tested in many ways before they can pass into the charmed circle of things accepted; but the enthusiastic research devoted to the question is slowly reaping its harvest, and the number of animal forms brought within the operation of the law is increasing. Observations on the human sex cells are still in the contentious stage, and many difficulties have naturally to be surmounted, but there seems to be every reason to anticipate an ultimate solution comparable with those reached in other types. To take one of the views held, the female cell, before maturation, has two heterochromosomes in addition to the ordinary number; these are of the same type, termed X-chromosomes. At the first maturation division they do not divide in mitosis, but move apart, so that each daughter-cell has one X element in its half-nucleus. In the second division all the elements divide in mitosis, so that the mature ovum has one X-element in its nucleus. The male cell has one X- and one smaller Y-element in its immature state: these move apart in the first division so that one of the daughter-cells has an X-element and the other a Y-chromosome: in the second division these divide, whence, of the four resulting spermatids, two have one sort and two the other variety. At fertilisation, if the mature ovum conjugates with a spermatic nucleus containing an X-chromosome, the new nucleus contains two X-elements, and is therefore female: if it meets with a spermatozoon with an accessory Y-element, the resulting nucleus contains X and Y and is consequently male.

Such a view, of course, puts the chances of sex-determination to the account of the paternal contribution. This seems to be the usual arrangement among animals so far investigated, although the reverse holds in certain birds and some insects. The conditions in the human ovum and male cell are, as we have said, at present matters of controversy, but there is no doubt that these conditions will, in the future, be considered of primary importance, and will take the main place in theories about sex-determination.

THE OPIUM CONFERENCES AT GENEVA.

We have from time to time[1] endeavoured to trace the progress of measures, both national and international, calculated to control the traffic and check the abuse of drugs of addiction, such as opium, morphia, cocaine, and heroin. In this country the Dangerous Drugs Acts of 1920 and 1923 gave legislative effect to the International Opium Convention signed at The Hague in 1912, so far at any rate as internal trade was concerned. The international aspect of the question, entrusted by the Peace Treaties to the League of Nations, has entered upon a new phase by reason of two international conferences which held prolonged sessions at Geneva from November to February last. The first conference produced an agreement, a protocol, and a final act signed on behalf of France, India, Japan, Netherlands, Portugal, Siam, and Great Britain, in the case of the last three with declaratory reservations. These instruments purport to ensure the execution, and strengthen the undertakings, set out in Chapter II. of The Hague Convention of 1912 in regard to "prepared" opium or opium for smoking. That chapter pledged the contracting powers to take measures for the gradual and effective suppression of the manufacture of, and internal trade in, "prepared" opium and the prohibition of its import or export either immediately or as soon as possible. The new instrument seeks inter alia to make the business a Government monopoly, and its authors, impressed with the magnitude of smuggling, postponed the suppression of the use of "prepared" opium to a period of not more than 15 years from a time when a Commission, appointed by the League of Nations Council, shall have reported that the export of raw opium from producing countries no longer constitutes a serious obstacle to the reduction of the use of "prepared" opium in consuming countries. The American delegation urged that the suppression of the use of "prepared" opium for smoking should take effect in 10 years, or at most 15, from ratification of this agreement, and not from some indefinite future date; they were, however, over-ruled. It was this point of divergence, together with another more serious one arising at the second conference, which led to the withdrawal of the American delegation, followed by that of the Chinese.

The second conference, which began with 41 States represented, was chiefly concerned with the national and international control of the dangerous habit-forming drugs dealt with in Chapter III. of The Hague Convention. The preparations of Indian hemp are now added to those of opium, morphia, heroin, and cocaine as scheduled drugs. The second conference resulted in a convention, a protocol, and a final act. Mr. Zahle, the able chairman of this conference, in summing up the results of the labours of this the largest and most difficult conference in the history of the League of Nations, made no claim to complete success. He said that it "had not removed the world's drug evil; but that, on the contrary, it had left behind questions which will not be solved for years, possibly even decades." He nevertheless claimed that it had secured publicity for the "terrible scourge from which so many different branches of the human family are suffering," and that it had created "a real mechanism for the day to day execution of The Hague Convention." He held that "the keystone of this control is the Central Board of eight permanent and disinterested experts," to be appointed by the Council of the League of Nations, charged with the collection of statistical and other information as to the import of the scheduled drugs and their consumption as well as the invigilation of international trade therein, and armed with recommendatory powers as to limitation thereof.

Mr. Zahle frankly admitted that "if manufacture and transit have been well cared for the same success cannot be claimed for production." It was here that the American propositions, accepted in principle by the Assembly of the League, failed to secure adoption by the second conference. These propositions were: (1) "If the purpose of The Hague Opium Convention is to be achieved according to its spirit and true intent, it must be recognised that the use of opium products for other than medicinal and scientific purposes is an abuse and not legitimate"; and (2) "In order to prevent the abuse of these drugs, it is necessary to exercise the control of the production of raw opium in such a manner that there will be no surplus available for non-medicinal and non-scientific purposes." Mr. ZAHLE allowed that "no voice was raised, and indeed no voice can be raised, against the justice of the principles enunciated by the American delegation." They were, however, regarded by many of the delegates as too idealistic. They appeared to conflict with the long-established habit of opium-eating in India, officially regarded as "legitimate." Moreover, such great opium-producing countries as Turkey, Persia, and China, even if they have the will, do not appear to have the power, at the present time, to limit the profitable production of opium to the slender requirements of medicine and science. As Mr. ZAHLE observed: "The producing countries realise that in total they are providing far more drugs than the world needs." He even went so far as to say that the conference had learnt that these drugs are "sedulously sought by a small coterie of people willing to poison their fellows for profit." Thus, the Geneva conferences, unable to realise the ideal, fell back upon more or less successful endeavours to idealise the real.

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[1] The Lancet, May 29th, 1920; Jan. 15th, April 30th, Dec. 10th, 1921; May 20th, 1922; and March 10th, 1923.

Annotations.

"Ne quid nimis."

REGIONAL ANÆSTHESIA.

THE methods of local and regional anæsthesia have received in this country less notice than they deserve, and this is to be attributed rather to the perfection to which our anæsthetists have brought the methods of general anæsthesia than to any want of enterprise on the part of British surgeons. Those who have visited surgical clinics abroad must have been struck by the small attention given to the technique of general anæsthesia, and for this reason we do not wonder that surgeons in those various countries have turned more and more for assistance to methods of injection. We in this country, on the other hand, are apt to forget that an unconscious and immobile patient is by no means safe from the shock of nervous stimuli, and to ignore the wonderful protection which local methods afford. Once again we see that medicine has no national bounds and that we must all learn from each other. The introduction of non-toxic substances, of perfected equipment, and of simplified technique have now made it possible to carry out any operation painlessly without other aid than local methods, and even under general anæsthesia there are few major operations in which the use of local and regional methods are not of advantage both to the surgeon and to his patient.

Of modern methods one of the most important is paravertebral anæsthesia, to which Mr. Stanford Cade, Hunterian Professor of the Royal College of Surgeons of England, calls attention in the Hunterian lecture published in this issue of THE LANCET. It was introduced by Läwen in 1911, and extended by Kappis and Ziegel, who in 1919 had performed 2000 operations by this means. In this method each spinal nerve must be injected with novocaine as it emerges from the intervertebral foramen, until the nerve-supply to the region of operation has been completely blocked. It is applicable to any region, but it requires considerable skill and it is a little tedious. In the neck it gives an excellent anæsthesia for operations on the thyroid, but in the dorsal region it is of peculiar value. Under it the most extensive operations on the thorax can be carried out with a degree of safety and an absence of shock unequalled in any other method, and this in patients whose pulmonary condition renders them bad risks for general anæsthesia. A more recent development, splanchnic anæsthesia, is dwelt upon in our columns this week by Mr. Stanley Hillman and Dr. R. E. Apperly. This ingenious method, which we owe to Wendling and Kappis, depends on an infiltration of the semilunar ganglia and the splanchnic nerves, where they lie in loose cellular tissue on the body of the first lumbar vertebra. This region can be reached from behind with extreme facility and safety, and the whole procedure takes very little time. As a result an almost complete block of afferent impulses from the stomach is obtained, abdominal relaxation under light anæsthesia is so complete that manipulations are greatly facilitated, and the absence of shock is astonishing. Whether used by themselves or as adjuncts to general anæsthesia, there can be no doubt that these methods place a very powerful weapon in the surgeon's hands, adding enormously to the safety of his work, and in many cases enabling him to carry out radical operations with success in conditions which would otherwise be beyond his powers.

HOSPITALS AND ACCIDENTS.

LAST year, according to a Home Office return that has just been published, there were 98,215 street accidents in Great Britain; in 1923 the number was 83,101. There has thus been an increase in 12 months of more than 15,000. Of these accidents 3931 were fatal as against 2979 in the previous year, and all but an inconsiderable fraction of the deaths were caused by mechanically propelled vehicles—indeed, the motor was concerned in more than two-thirds of all the accidents. Curiously enough the pedal cycle is becoming increasingly dangerous both to the rider and the public, and in 1924 it was responsible for 241 of the fatal accidents—32 more than in the year before. The more thickly congested traffic becomes the more accidents there are likely to be, but it is beyond question that the perils not only of crowded streets but of country roads are enormously increased by reckless driving and the mania for speed. The Jehu of the motor-cycle is an especially furious driver, and he is little disposed to moderate his pace even when he has a female pillion-rider behind him, though it must be admitted that these young ladies have developed amazing skill in balancing, chiefly, perhaps, by cultivating the difficult art of sitting perfectly still. The pedal cycle is, however, a constant source of danger in busy streets. The pedestrian who sees a clear crossing is daily disconcerted by the sudden darting out of an unsuspected cyclist, who perceives a golden opportunity of saving the ten seconds or so which appear to be vital to his purposes. The consequences we see in the 18,363 street accidents in which pedal cycles were concerned last year—nearly 3000 more than in 1923. It must, moreover, be remembered that the total of nearly 100,000 accidents is made up entirely of misadventures which came under the cognisance of the police, and takes no account of the large number of minor mishaps which just missed being serious and were not reported.

The large and rapid increase in traffic accidents is in many places causing serious trouble to the hospitals, which find the beds sorely needed for the reduction of their waiting lists blocked by street casualties. A glance at the report of almost any large hospital for the past year will show how considerable is this obstruction. Thus we find that Leeds General Infirmary, which had a waiting list of 1347 on the last day of 1924, was compelled during the year to treat more than 18,000 casualty and emergency cases, 410 of which were the outcome of motoring accidents. Wolverhampton Hospital admitted 1168 accident and emergency cases, in addition to treating 9303 out-patients suffering from accidents. The East Suffolk Hospital at Ipswich reports "a great increase" in the number of street and road accidents, and this in a district mainly rural. These are instances taken at random from reports which chance to be available at the moment; they might be paralleled in scores of other cases. The Ipswich board of management suggests, as so many other people have done, the permanent reimposition of the obligation upon cyclists to carry rear lights. This is clearly desirable as a measure of general safety, but the vast majority of traffic accidents occur in daylight, and they are caused in the main by ignorant, reckless, or furious driving. Many drivers know little of the rules of the road, and many of those who do are careless and selfish. But the real danger, and the cause of the majority of accidents, is excessive speed. The precise nature of the safeguards that will presently have to be adopted is open to argument, but we cannot afford to allow accidents to increase at the rate of 15,000 a year and to put a consequent strain upon hospitals which gravely augments the congestion from which most of them are suffering.

SURGICAL TRAUMA AND SYPHILIS.

IN a paper based on the records of 78 cases in the Section on Dermatology and Syphilology of the Mayo Clinic, Dr. William H. Goeckermann[1] discusses the effect of surgical trauma in patients suffering from syphilis, with special reference to the healing of the operation wound. Of the 78 patients 50 had received some treatment for syphilis, and 28 had not been treated. Only one of the patients in the former group showed any delay in the healing of the wound. The case was one of cancer of the breast in which extensive resection was carried out. The infection was obviously pyogenic, and healing was not stimulated by antisyphilitic treatment. Three patients in the treated group died shortly after operation, but without syphilis being obviously responsible for the fatal issue. In the second group, in which antisyphilitic treatment had not been adopted for various reasons, five patients showed distinct delay in the healing of their operation wounds, but in three of them a gumma had been incised under the mistaken belief that the lesion was an abscess. The writer is of opinion that a considerable number of patients with syphilis are operated on without the surgeon being aware of the condition, and considers that the operation risk could be reduced to a minimum by a routine Wassermann test and proper treatment in certain cases.

THE HARBEN LECTURES.

THE Harben lectures for 1924 are published in the March and April issues of the *Journal of State Medicine.* In them Prof. E. L. Collis collects a mass of statistics dealing with the prevalence of tuberculosis before the war, during the war, and since the war in many countries. Sweden, Australia, Prussia, the United States, Czecho-Slovakia, the Netherlands, Denmark, and Japan all come under review. Ireland, Scotland, Wales, and England are dealt with in the second lecture. The figures will be of special interest to epidemiologists. After a careful survey of the data, Prof. Collis allows himself to draw two deductions. (1) That phthisis mortality in early adult life is an expression of resistance, lowered by malnutrition, and is particularly manifest in the female sex during puberty and the child-bearing period of life. By malnutrition he means a food-supply inadequate to the demands of activity. Thus a supply adequate for domestic life may be inadequate for industrial activity. (2) That phthisis mortality in late middle-life is an expression of resistance lowered by wear and tear and is particularly manifest in the male sex. Prof. Collis concludes with a consideration of occupational records. Amongst his other deductions he points out that the aggregation of workers in indoor occupations favours the spread of tuberculous infection, and that infection from adult to adult thus becomes a main influence in the spread of pulmonary tuberculosis. He also shows that dust which impairs the vitality of the lungs predisposes to tuberculous infection at that late period of life when wear and tear on tissues is becoming most pronounced. Silica dust, he says, exerts a peculiar influence in damaging the lung tissues and probably by its toxic action in also causing fibrosis of the kidneys. The findings of Prof. Collis are in general agreement with those of other workers and observers. It has frequently been pointed out that the male mortality from tuberculosis is almost always in excess of that of the female, and that this excess is much more pronounced in the case of inland manufacturing towns than it is in seaports where much of the work is out of doors. As regards the effect of food, it was observed during the war that women who worked in factories at which there was a good canteen enjoyed better health with the harder work and the better food than they did before the war with lighter work and an inadequate dietary. "The evidence," says Prof. Collis, "is definite that from age 10 to about age 30 the tuberculosis problem is essentially a food problem."

DR. KNOCK.[1]

EVEN as a small boy Dr. Knock was interested in medicine, and he studied the advertisements of patent medicine vendors so that at the age of 12 he was "a doctor at heart." He took a degree in ancient history and then sold shirts in Marseilles until, finding himself out of work, he applied for post as ship's surgeon, which he got after candidly admitting that he was no doctor! After six months of his "trial and error" methods he re-entered the business world and made sufficient money as a dealer in monkey-nuts to enable him to take a medical degree, receiving honourable mention for his essay entitled "The Misuse of the Word Cure in Medicine." In the first act of this play by Jules Romains, produced last year in Paris, which Mr. Harley Granville-Barker has now translated, we find Dr. Knock just arriving at a country railway station near the village of St. Maurice and being met by Dr. Parpalaid from whom he has bought, by letters and without inspection, what proves to be an almost negligible practice. In the next act we find Dr. Knock in his consulting-room, complete with wall-charts and modern apparatus, arranging with the town-crier to have a scheme of free consultations on Monday mornings cried around the village. He interviews the schoolmaster with regard to lectures on hygiene and the local chemist as to closer coöperation. "Every single soul in the place," he says, "is, ipso facto, a potential patient." Presently there arrive those who wish to take advantage of the free consultations. Some have come as a joke, the farmer's wife to have a look at the new doctor, a faded "lady" to get advice on the cheap, but they all leave the consulting-room quite convinced that they are seriously ill. The third act takes place in the hall of the local hotel, now full of patients, and Dr. Parpalaid arrives to collect the first instalment of the purchase money. He is at first astonished and then horrified at the results which Dr. Knock has obtained in the course of his first three months, and there is an amusing speech by Dr. Knock extolling the great science of medicine which ends with a rapturous description of "two hundred and fifty clinical thermometers lifted in unison and gently placed and held beneath two hundred and fifty silent tongues!" Dr. Knock's forceful manner succeeds in overcoming his predecessor's scruples and the play ends with the rather pathetic spectacle of the old man asking for advice about his own health.

The play is a clever ridicule, not of scientific medicine but of the mentality of the public, and even if Dr. Knock's methods were reprehensible—and they were though to some extent he deceived himself—he was aided and abetted by the entire village which to a man and woman welcomed his presence among them. Mr. Granville-Barker has had a difficult task in providing an English version which is not a translation, but a real adaptation for the English stage. Just here and there the crisp French epigram has given place to an English sentence which is not quite so telling, but on the whole the rendering is an exploit.

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[1] Surgery, Gynecology, and Obstetrics, January, 1925.

[1] Dr. Knock: A play in three acts. By Jules Romains. In an English version by Harley Granville-Barker. London: Ernest Benn, Ltd. 1925. Pp. 95. Paper covers, 3s. 6d.; cloth, 5s.

SCHOOL FEEDING.

Those interested in food at schools will find in *Science Progress* (April, 1925, p. 613) a readable common-sense survey of the subject by Dr. G. E. Friend, medical officer to Christ's College. Institutional dietetics labours under many disadvantages from which the domestic life is free. Fair criticism seems to be hardly possible; the recipients habitually criticise everything adversely to such a degree that the providers are driven into maintaining even the indefensible positions into which ignorance, carelessness, and monotony may have led them. It is, too, no doubt true, as Dr. Lyttelton has lately emphasised, that a certain amount of discipline in food is a most desirable part of the training in self-control which every school must of necessity undertake. Here, again, there is the perennial difference of opinion between the pupils and most of the parents on the one hand, and the schoolmaster on the other as to when fair discipline ends and tyranny begins. Dr. Friend is neither pupil nor master, and his testimony is of the more value. With an average age of about 14½, he judges that about 3000 or perhaps 3200 calories a day is the right amount, given in three meals at 8, 1, and 6, with a supper snack for the older boys. Work in school before breakfast, and even chapel, he entirely condemns, and holds that breakfast must be a substantial meal—meat, fish or porridge, with jam or marmalade, and unlimited bread and butter. Too short a time is often allowed for meals, and he points out that the smaller boys who get served last are apt to suffer most. Lack of variety and adaptability, bad and slovenly service, and poor cooking are other faults which he mentions. He urges that these defects become less apparent if the whole school of, say, 500 boys, is served from a central kitchen rather than in separate houses, because really expert superintendence can be secured. Little is said about vitamins. Dr. Friend evidently takes the sensible view that they are apt to be overdone nowadays with some neglect of calories and protein. But he is emphatic that butter must be provided, and not margarine. The known difference is that butter promotes growth and margarine does not; and this raises one of the many curious questions which have come up in the recent flood of interest in what we eat. It is generally accepted without question that it is wholly desirable that young persons should be grown to the maximum possible size, and that a boy 6 feet high is a better product than one 6 inches shorter—a reasonable build being always premised. Putting aside all but purely materialistic considerations, one wonders what justification there is for this. The youth of to-day certainly provide the most lovely spectacles of big growing boys and girls; they are a joy to look at, but are they going really to be healthier or more effective citizens than their meagre grandparents? They will certainly be more expensive, for they have more to keep up. There is a clinical impression that largely built people stand illness badly; the late influenza was repeatedly reported to be particularly fatal to the hearty and robust, and it is possible that the American insurance companies may find out later on that over-size is as disadvantageous as over-weight. Life often seems to last extra long in tiny bodies. But even if small people are healthier, the prestige of size may still encourage the young to grow as much as they can. Small people are often rather touchy on the subject of stature; so much so that it might be inadvisable to give the stature of some of our greatest people, lest that should be the one of their qualities which they least desire to be broadcasted.

THE BRITISH SOCIAL HYGIENE COUNCIL.

The National Council for Combating Venereal Diseases (Incorporated), of 102, Dean-street, Oxford-street, London, W., will henceforth be known as the British Social Hygiene Council. The resolution to effect this change of name was passed at an extraordinary general meeting of the Council held on April 6th, and it will be submitted for confirmation at a second meeting of the Council to be held on May 4th. The arguments in favour of this change, as set forth by the Council, are interesting in that they show the progress which has been made in embracing the widest aspects of the venereal diseases problem. The Council consider that the need that originally existed for emphasising the fact that venereal disease was a public health problem is not so acute after the last ten years of propaganda on the subject. The work of the Council during the last two years has extended considerably along preventive lines. This brings the representatives of the Council into touch with many social and educational bodies that are anxious and willing to consider problems relating to the development of self-control and a higher standard of sex conduct among the rising generation. The attainment of a higher standard of sex conduct is essential for the complete elimination of venereal disease, but it is by no means necessary, nor in fact desirable, the Council holds, to give such educational lectures under the title of venereal disease, as the field covered is so much wider, and for this purpose many groups can be reached under the title Social Hygiene that would not be accessible under the old title. The Board of Trade and the Ministry of Health have both notified their approval of the proposed change to British Social Hygiene Council. In order not to break all links with the past, the Council suggests that the words "lately National Council for Combating Venereal Diseases" may be inserted under the new title on certain publications. Thus we may announce the Second Imperial Social Hygiene Conference, which is to be held in October at the British Empire Exhibition, Wembley, as organised by the National Council for Combating Venereal Diseases. This conference is the outcome of requests received from overseas, and the whole of three days, from Oct 5th to 7th, will be given to a discussion of Imperial problems.

THE LETTERS OF GUY PATIN.

Dr. F. R. Packard has reprinted[1] with sundry additions the very interesting articles which appeared in "Annals of Medical History," Vol. IV., Nos. 2, 3, and 4. The book is chiefly made up of extracts from Guy Patin's letters to his various correspondents which give a life-like picture of medical affairs in Paris during the seventeenth century, and it opens with a useful historical résumé of the period, an understanding of which is necessary for the right appreciation of Patin's letters. These letters, which were not written for publication, contain the most amusing and often singularly caustic reflections upon his brother physicians, whether individuals or corporations such as the Apothecaries, and also upon statesmen even in the highest places, such as Richelieu or Mazarin. After the fashion of Vergil, who desired his executors to burn the MS. of the Æneid, Patin asked his chief correspondent Spon to burn his letters, but luckily for literature neither request was granted. Among the private and family matters contained in the letters Dr. Packard quotes one letter which is particularly delightful, giving an account of the death of Patin's mother-in-law. Writing to Spon, he says: "Do not weep much for the death of my mother-in-law, she was not worth it. She was a *good* woman, rich and avaricious, who feared nothing so much as death, which nevertheless seized her quite suddenly at the end at her beautiful country house at Cormeilles." Dr. Packard is to be congratulated upon having provided English readers with specimens of the wit and satire to be found in Patin's correspondence, and we hope that it will lead many to read the originals.

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[1] Guy Patin and the Medical Profession in Paris in the Seventeenth Century. By Francis R. Packard, M.D. New York: Paul B. Hoeber. 1925. Pp. 334. $4.

CHEMICAL WARFARE: LEWISITE.

It is perhaps too much to expect that chemical warfare is a matter merely of historic interest, though most of the medical profession will continue to hope that the Washington Conference was but a beginning of a series of international debates which will in time bring about a material limitation of armaments and of the more barbarous aspects of war. Such a wish is enhanced by the study of recently published books, which put before us the main known facts concerning the poisonous substances which have been used, or which are available, in warfare. Of such chemical substances the one which at present appears the most potentially dangerous is an American invention popularly known as Lewisite. Much has been rumoured concerning this compound, and headlines in the lay press have appeared from time to time of so dramatic a nature that it appears worth while to repeat some of the more scientific data available to us. These are to be found in a volume[1] recently published by Lieut.-Colonel Edward B. Vedder, of the Medical Service of the United States army, who has collated in an interesting book all the facts concerning chemical warfare which are likely to be of use to medical officers. Lewisite, or β-chlorvinyldichlorarsine, is a heavy, oily liquid prepared by passing acetylene through arsenic trichloride in the presence of aluminium chloride. It is readily hydrolysed by water, especially in the presence of alkalis. Although its effects in actual warfare have never been tested it appears to be a weapon of even greater efficacy than was dichlordiethylsulphide ("mustard gas"). The exposure of dogs to the vapours of this substance rapidly leads to intense irritation of the eyes, nose, throat, and upper alimentary and respiratory tracts. A membranous exudate makes breathing difficult and painful, and if death is not produced within two days it usually ensues a few days afterwards from the purulent bronchitis and broncho-pneumonia which follow the initial respiratory lesions.

These effects of lewisite are not materially different from those of mustard gas, where the exposure leads to fatal issue, but it is in its effects on the skin that it appears likely to prove far more deadly if ever put into use in warfare. The irritation and burning of lewisite appear very quickly after the application of the liquid substance to the skin, and even in comparatively minute doses sufficient of it is absorbed to produce rapid death from arsenical poisoning. The lesions thus produced affect chiefly the tissues immediately underlying the seat of burning, but the lungs and kidneys show toxic effects in all cases, and arsenic can be recovered from practically every tissue of the body. When death is not produced the burns themselves tend to be of a most serious nature; extensive necrosis of the skin, subcutaneous tissues, and underlying muscles occurs, leaving infected areas which can only heal slowly by granulation. The treatment of such injuries is believed to be effected most satisfactorily by the application of weak alkalis, such as 5 per cent. sodium hydroxide or a ferric hydrate paste.

In view of the potential horrors of such weapons the defence of the "humanity" of chemical warfare made by Colonel Vedder in his introduction seems a little superfluous; but Mr. J. B. S. Haldane,[2] who attempts a reasoned defence of chemical warfare in general on the grounds of the comparative harmlessness of gas warfare, uses dialectical adroitness almost excessively. None the less, "Callinicus" is an arrangement of facts whose seriousness should not be impaired in the reader's estimate by the exploiting of humorous gifts.

INDUSTRIAL HYGIENE IN MOSCOW.

In the February issue of the *Journal of Industrial Hygiene*, which has only just reached us, an objective account is given by A. Hamilton and R. Hilles of the hygiene of factories and workshops in Moscow. Industrial medicine, it appears, has become a required branch in the Russian medical curriculum, and visits to factories are part of the prescribed work. Moscow contains a wonderful Museum of Safety housed in the former palace of the Galitzin family, one room of which is given over to anti-alcohol propaganda; normally, distilled liquors are forbidden in the country. Efforts are made at institutes to fit the work to the man and the man to his work; all sorts of physiological and psychological experiments are carried out; but in the factories themselves little evidence exists yet of efforts to prevent unnecessary fatigue or to increase efficiency. The factories present extremes far wider than exist in America and Western Europe; almost alongside one another the best and worst possible conditions of work are to be found. "The theory of Soviet Russia," the authors write, "is that labour, industrial and agricultural, is the foundation of the State and that the life of the industrial worker should centre round the factory just as the life of the peasant centres round the farm. Their ideal is to have in connexion with each factory not only communal houses but also a creche, a kindergarten, a hospital, an amusement centre, and whatever else the workers need and want." Wages for men and women are the same for the same work, but the women seldom carry out the same work as the men. It is encouraging to learn that industrial medicine is engaging the service of some of the ablest men and women in Russia.

BROKEN GLASS AS A POISON.

A year ago we commented[1] on correspondence in *Municipal Engineering* on the subject of powdered or broken glass as a "poison," and since that date a number of provincial newspapers have stressed the seriousness of particles of glass in bottled foods, chiefly jam. In one case reported a public analyst found that 8 out of 11 samples of jam in glass containers showed the presence of particles of glass, and another analyst found 8 samples out of 49 to be similarly contaminated. According to these reports the Ministry of Health was making inquiries into the matter. We certainly endorse the prevalent opinion that the matter is a serious one—powdered or broken glass may cause serious symptoms and on occasion even death—and that every measure should be taken to prevent the occurrence of glass in food. This state of affairs could no doubt be greatly diminished by the rejection of badly made containers and by destroying the food which when poured hot into glass containers causes the container to fly, instead of returning it after straining to be reboiled and subsequently poured into fresh containers—a practice common, we understand, among makers of cheaper brands of jam. Ideally better than such destruction would be the use of metal containers which possess additional advantages when sterilisation and keeping qualities are also considered, although it occasionally happens that successful prosecutions are undertaken for the presence of tin in the food issued in tinned iron containers. But the public are conservative and would be likely to resent an innovation such as jam in tins. So much is this the case that bottled fruit imported in tins may be transferred to bottles before sale. Nevertheless, whilst admitting fully the potential dangers, we emphatically dissociate ourselves from any suggestion that broken or powdered glass is a common cause of appendicitis or a cause at all of cancer. Those who are rightly ventilating this subject in the press are doing their cause harm by suggestions such as these which entirely lack foundation.

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[1] The Medical Aspects of Chemical Warfare. By Edward B. Vedder, Lieut.-Colonel, M.C., U.S.A. London: Baillière, Tindall and Cox. Baltimore: Williams and Wilkins. 1925. 324, 6d.

[2] Callinicus: a Defence of Chemical Warfare. By J. B. S. Haldane, Sir William Dunn Reader in Biochemistry, Cambridge University. London: Kegan Paul, Trench, Trübner and Co. 1925.

[1] The Lancet, April 12th, 1924, p. 761.

MENTAL HOSPITAL ADMINISTRATION.

DURING the week two important conferences have been held, convened by the Chairman of the Board of Control, to consider some aspects of mental hospital administration. For the Tuesday conference invitations were sent to the various bodies interested in the training and registration of nurses, with a view to obtaining some light upon the best solution of the nursing problem in mental hospitals. The Departmental Committee which reported in November last made certain recommendations in the direction of so increasing the status and emoluments of trained mental nurses as to make the career attractive to a greater number of educated women. The Committee recommended the grading of mental hospitals according to training facilities and the extension of the practice of seconding mental nurses to general hospitals, as well as the appointment upon the inspectorate of the Board of Control of a doubly-trained nurse to advise the various medical and nursing officials. The Tuesday conference dealt seriatim with the principal points raised by the Departmental Committee, the subject in each case being introduced by the medical superintendent of an important mental hospital. Finally, the matron of the Cardiff City Mental Hospital spoke of the nursing of male patients by women nurses, on which subject (by a useful coincidence) Prof. G. M. Robertson gave to the Royal Commission last Saturday the fruits of his pioneer work. Experience at Morningside has convinced all who have worked there of the therapeutic value of the female nurse in the acute male wards, where women appear to have more power than men in subduing excitement and their presence tends to reduce any tendency to roughness.

The second conference on Wednesday was asked to consider the provision of further mental hospital accommodation, and to it were invited the medical superintendents of county and borough mental hospitals, as well as one or more representatives of each visiting committee. Sir Frederick Willis in his letter of invitation remarked that the vacant accommodation in mental hospitals in this country is at the moment sufficient to last only for another year or so, adding that this is not due to increase of the incidence of insanity but simply to the natural growth of population. He went on in his letter to suggest various ways in which accommodation might be set free in existing institutions: by transfer of certain patients to Poor-law institutions, by making a wider use of absence on trial and boarding-out, by discharging others to the care of relatives, and by boarding outside the hospital itself nurses in excess of those required for the proper conduct of the institution. Many patients now in mental hospitals would be better in institutions for mental defectives were beds available for them. Nevertheless, the question of providing new accommodation could not be avoided, and it was round the supply of additional beds that discussion centred.

The annual Congress of the Royal Institute of Public Health will be held in Brighton and Hove from Wednesday, May 27th, to Monday, June 1st inclusive, Lord Leconfield, Lord Lieutenant of the county of Sussex, presiding. Discussions will be held and papers read on important subjects in each of the six sections of the Congress—namely: (1) State Medicine and Municipal Hygiene; (2) Naval, Military, and Air; (3) Industrial Hygiene; (4) Tropical Diseases; (5) Pathology, Bacteriology, and Biochemistry; and (6) Women and the Public Health. Copies of the programme and full particulars may be obtained from the Secretary of the Institute, 37, Russell-square, London, W.C. 1.

WE regret to announce that Sir John MacAlister, the Secretary of the Royal Society of Medicine, has had to resign his post on account of ill-health; a new secretary will be appointed as soon as possible.

THE death is recorded, at the age of 70, of Surgeon Vice-Admiral Sir Arthur William May, K.C.B., which occurred on Monday, April 20th, at St. Tudy, Cornwall. Sir Arthur May was Director-General of the Medical Department of the Admiralty from 1914 to 1917.

THE next social evening of the Royal Society of Medicine will be held on Monday, May 4th, at 8.30 P.M., when Fellows and guests will be received by Sir StClair Thomson, the President. At 9.30 P.M. Dr. Robert Hutchison will give a short address on Dr. Samuel Johnson and Medicine, illustrated with eighteenth-century portraits.

THE memorandum of evidence prepared by the British Medical Association has been placed before the Royal Commission on National Health Insurance, and the witnesses-in-chief are to appear before the Commission on April 30th and May 7th. These witnesses are Dr. R. A. Bolam, Chairman of Council; Dr. H. B. Brackenbury, Chairman of the Representative Body; Dr. H. G. Dain, Chairman of the Insurance Acts Committee; and Dr. Alfred Cox, Medical Secretary.

SOUTH LONDON HOSPITAL FOR WOMEN.—The annual general meeting of the hospital will be held at Gresham College, London, E.C., on Wednesday, April 29th, at 3 P.M. The Hon. Mrs. E. L. Franklin will be in the chair, and Lord Riddell, Dr. Louisa Martindale, and Mr. G. Murray Hill will speak.

INVALID CHILDREN'S AID ASSOCIATION.—By permission of Sir John and Lady Ward the annual meeting of the Invalid Children's Aid Association will be held at Dudley House, Park-lane, W. 1, on Tuesday, May 12th, at 3 P.M. Lady Titchfield will preside, and the Right Hon. J. Ramsay MacDonald, M.P., Sir Bruce Bruce-Porter, Dr. Letitia Fairfield, Miss Madge Titheradge, and the Rev. J. C. Pringle will be among the speakers. Tickets are necessary for admission, and can be obtained from the Secretary, 217, Piccadilly, London, W. 1.

ILLEGAL PRACTICE BY A DRUGGIST.—In a case recently heard in the Nuneaton County Court before Judge Staveley Hill, the Society of Apothecaries were plaintiffs, and Mrs. Ashton, of the Coton Drug Stores, Nuneaton, was the defendant (THE LANCET, March 21st, p. 627). The action was brought under the Apothecaries Act, 1815, to recover a penalty of £20 from the defendant for having acted as an apothecary without qualification. From the evidence, it appeared that in September last there was an outbreak of small-pox at Nuneaton. Early in November a Mrs. Hutchinson found one of her children with a rash. She took the child to the defendant's shop and asked the defendant if the child had small-pox. After looking at the rash the defendant said "No," but she thought it was a chill on the blood. The defendant supplied a bottle of medicine for which she was paid 1s. Towards the end of November the medical officer of health received notification that a sister of the child in question was suffering from small-pox, and on visiting the house he found four members of the family suffering from the disease. The child seen by the defendant had an old rash and the medical officer was of opinion that this child had had small-pox for three weeks. He ascertained that during this time the child had been attending school and in consequence he vaccinated all the school-children. It was contended that as the result of the failure of the defendant to diagnose the disease correctly other children had been infected. The judge said that, having carefully considered the authorities, he was of opinion that the defendant had brought herself within the statute, and gave judgment in favour of the plaintiffs for the penalty and costs. An appeal against this decision was entered by the defendant but afterwards abandoned.

Modern Technique in Treatment.

A Series of Special Articles contributed by invitation on the Treatment of Medical and Surgical Conditions.

CXIX.—THE TREATMENT OF FROST-BITE.

FROST-BITE is a local condition due to the action of cold upon the tissues of the body, as a result of which an area more or less limited in extent is deprived of its blood-supply. The condition is produced in two very different ways. In the first the direct action of cold upon the skin and underlying structures causes constriction of the capillaries and small blood-vessels, whereby they are so narrowed that no blood can pass through them; in the second a reactive process, there is exudation through the damaged vessel walls into the surrounding tissues of the frost-bitten part, as a result of which the vessels again become constricted, and circulation cut off.

The first condition shows as an ischæmic waxy-white patch, well defined in outline, somewhat resembling the rapidly produced evanescent white area which results when ethyl chloride is used for local anæsthesia. The naturally produced condition has a somewhat dirtier, waxier appearance, with none of the "rime" characteristic of ethyl chloride. The second condition resembles the ordinary chilblain: it is aggravated by long-continued ischæmia, and by too rapid a return flow of blood. Certain factors predispose. They are those which cause a lowered vitality and a depressed circulation. The most important are: Cold (of the body generally), fatigue, exhaustion, hunger, and vitamin deficiency, especially scurvy. All these not only render the parts more liable to frost-bite, but by their mental effect cause the man to be less vigilant of its onset, a most important factor. Causes acting locally are winds, moisture, and grease. The parts of the body most liable to attack are the extremities, the exposed parts of the face, especially where the skin is stretched across underlying bone—e.g., the sides of the nose the cheek-bones, and the chin; the ears, especially the tips and edges; the fingers and hands; the feet, especially the toes and heels. The parts most liable to permanent damage are the feet.

The frost-bitten part, if treated early and on proper lines, recovers completely; if neglected the part dies and gangrene sets in. When the damage is superficial the skin becomes dry and black, and finally peels off, leaving a clean new skin underneath. In the case of extremities such as the toes, the damage may involve the whole thickness, so that they become dry, black, and shrivelled, produc'ng the typical clinical picture of dry gangrene. The condition due to exudation is more serious. The part is at first dusky red, with a varying amount of swelling and œdema, and very irritable. Frequently blisters form which may contain straw-coloured serum, or in worse cases a thick purplish exudate. The part readily becomes septic, and moist gangrene follows, with absorption of toxins and severe effects upon the general health.

Signs and Symptoms.

The onset of frost-bite is often insidious, and on inspection of the part in a suspected case there may be little to see. The waxy appearance may not be present, since the primary frost-bite may have passed off, or the condition have been produced by the prolonged action of less severe cold, especially if associated with wet.

Explorers are taught to regard all doubtful cases with the greatest suspicion, and to look upon the following signs as indicating that a part is seriously damaged: (1) Cessation of circulation, as evidenced by the lack of response to finger pressure; (2) loss of heat—the affected part feels colder than the surrounding areas; (3) loss of sensation; (4) inability to use the part—e.g., if the toes are frost-bitten they cannot be freely moved (this does not prevent walking, for there are numerous instances where men, to save their lives, have hobbled along on frost-bitten feet, with disastrous results locally); (5) changes in colour, especially any suggestion of mottling, which is at first red and pink, dark red and pale pink, later becoming blue-grey, and in the worst cases purple and dirty white. It must be emphasised that these signs are often very difficult to recognise, the circumstances under which frost-bite is seen in its early stages usually being very disadvantageous.

Prevention and Early Treatment.

The importance of prevention and early treatment hardly needs emphasising, but one cannot too energetically condemn the principle, still taught, of rubbing the part with snow and snow-water. To do this to a perfectly healthy piece of skin is a joke often played upon the tenderfoot, but is never adopted in polar regions for the treatment of frost-bite. The snow has often a gritty feel, not at all like the mushy stuff of this country. In the case of the tender parts, such as the face, it may actually do harm by removing the cuticle and damaged parts of the epidermis, leaving a weeping sore which heals with difficulty, and renders the part liable to further attack. It has the good point that it emphasises the danger of too great heat, which increases the amount of exudation and local damage.

Prevention is aimed at in two ways: generally by maintaining health and a vigorous circulation, and by attempting to eliminate the predisposing factors, and locally by providing suitable clothing. Whatever form the clothing takes the principle is the same—i.e., the placing of a non-conducting air-space between the skin and the cold outer air, and preventing its dislodgment. The two chief forms of clothing used for this purpose are "furs" and "woollens," which enmesh the air in the hairs and stitches respectively. The factors which tend to dislodge it are winds which blow it away, and damp or grease which takes its place. If furs are used the skin part acts as a wind-proof, but woollens must be fitted with an outer wind-proof covering. Local prevention may therefore be summarised as follows: (1) provision of suitable clothing and keeping it in repair; (2) keeping it dry; and (3) avoiding grease.

Clothing must be loose-fitting, with no constricting bands. With regard to keeping the clothing dry, the moisture may be derived from external wet, or internally from perspiration. Practically speaking, no part offers any difficulty except the foot-gear. Waterproof foot-gear retains perspiration, that which permits of ventilation allows access of damp from outside, and it is impossible to ensure absolute dryness. As long as the feet are warm from exercise no harm results from the damp; it is during halts on the march and in standing-about jobs that danger arises. Damp socks should always be removed before getting into the sleeping bag and another pair substituted, or none at all worn, and the feet should receive a brisk dry rub. The moisture acts detrimentally by producing a sodden, unhealthy condition of the skin, and by acting as a much readier conductor of cold.

It is commonly believed that fats, oils, and grease are good non-conductors, and if placed on the clothes or skin help to keep the part warm. This is not true of the oils and fats met with in polar regions, for they are much readier conductors than the air which they replace. It is probable that the same holds true for all the fixed oils and fats, which are not readily absorbed by the skin. The volatile oils may be beneficial, for they are absorbed by the skin and produce dilatation of the blood-vessels with increased flow of blood to the part, but if used in such excess as to fill the air-spaces they are detrimental. Vaseline and glycerine have been used on the face to protect it from strong winds, and apparently with success, but in still air they have no value. Where it has been necessary to immerse the feet for long periods in cold water, as, for example, in the trenches during the late war, whale oil well rubbed into the skin was found beneficial in preventing trench-foot, but this condition must not be confused with frost-bite, though the end-results may be similar. A man's own hair provides excellent protection, but a beard is of doubtful value, since the moisture from the breath freezes on it, forming large masses of ice. Modern explorers keep the hair well clipped with a barber's fine clippers.

The *early treatment* of primary frost-bite consists in gently coaxing back the circulation by the application of dry gentle warmth, and the simplest and safest source of this is body heat. The application varies a little according to the part affected.

Face and Ears.—The onset occurs most frequently in windy weather. The part which has been cold becomes more comfortable, but with a feeling of numbness. Very often the man attacked knows nothing of his condition till warned by a companion, since the parts are invisible to himself. It should be a recognised custom for men in company to scrutinise each others' faces frequently, those travelling alone should keep a small mirror in the pocket. A hand warm from the mitt should be applied to the frost-bite. When one hand becomes cold the other may be used, and a companion may also "lend a hand." Very light massage may be used, but no rubbing violent enough to cause an abraded surface.

The *fingers* are commonly frost-bitten owing to the fact that fine manipulations cannot be carried out with mitts, so that the fingers have constantly to be exposed. It is easy to slip off the mitts for examination, consequently the white patches are usually instantly recognised. Treatment consists in placing the affected hand inside the clothing next the skin; commonly it is thrust under the upper part of the trousers and compressed between the thighs to slow up the return flow of blood, which is often painful. Work aloft at sea causes many cases, and is particularly dangerous, owing to the difficulty of keeping a firm grip on stays and rigging. Anything which produces pressure and tends to express blood locally predisposes, and contact with cold metal is particularly liable to produce the condition. The danger is greater if the mitts are damp and exposed to strong winds.

Feet.—In spite of close vigilance frost-bite of the feet is often not detected until long after its onset. This is due to the fact that the harder skin of the heels and the balls of the feet is relatively insensitive, and that foot-gear is comparatively difficult to remove for inspection of the suspected area. It is particularly dangerous for the following reasons: (1) the difficulty of recognition as above; (2) the feet are essentially extremities; (3) in snow it is almost impossible to keep the feet dry either from external damp or from perspiration; (4) pressure and constriction are more liable to occur than in other parts. As regards *prevention*, the question as to type of foot-gear and its care is one of the greatest problems in polar exploration. Treatment, as elsewhere, is by the application of dry gentle warmth, but the harder skin of the feet permits of more vigorous massage, which is best carried out by a companion. If after some minutes there is no sensation of returning circulation, evidenced by a feeling of intense "pins and needles," the foot should be taken inside the clothing next the skin. This treatment should be persisted in for some hours before hope of recovery is given up. For the companion who has undertaken the thawing-out process it is decidedly unpleasant; others may take turns with advantage.

If recovery is delayed for some hours the part must be kept under careful observation lest the recovery be only temporary. If there is any doubt the part must be kept warm and dry, not used, and if circumstances permit, wrapped in dry cotton-wool and lightly bandaged or placed in a frost-bite sock. Ointments and greasy preparations should not be used, and any greasiness of the feet should be removed by turpentine or methylated spirit. Heat, especially damp heat in the form of fomentations, is not to be used, for there will be an excessive reaction with exudation, formation of blisters, sloughing, possibly sepsis, and subsequent moist gangrene. In spite of all care blisters may form containing clear serum or dark-coloured viscous fluid. If the skin of the blisters can be kept intact without great discomfort they should not be opened till this can be done aseptically. Dry dressings should be applied. The best and simplest in difficult circumstances is a piece of plain white lint, cut to shape, dried at a fire, over the flame of a Primus stove, spirit lamp, or at any flame which can be produced, and scorched to render it sterile. This should be covered with similarly dried cotton-wool, and the whole lightly bandaged. No matter what the subsequent course, nothing but dry dressings should be used in the field. The treatment of a gangrenous part comes within the domain of general surgery, and has no place in this article, but I would urge all field medical officers faced with the care of this really serious condition to pin their faith to dry gentle warmth, even over long periods of time, with no other application than perhaps occasional use of turpentine or methylated spirit.

Frost-bite of other parts of the body than those described are rare. I have seen one case only: frost-bite of the penis, which occurred under the most exceptional circumstances whilst a man, utterly fatigued, was attempting defæcation in the open. Even in the lowest temperatures momentary exposure of the bare skin does not produce immediate frost-bite, but the length of time that it can be exposed with safety depends upon factors such as degrees of temperature, presence or absence of damp, and strength of wind. Much depends also on the circulation: if the body has been at rest and the circulation is sluggish, frost-bite is more easily induced than if the blood is pulsating actively as the result of hard work, walking, or running. It is the common experience of explorers that a part once frost-bitten is rendered more liable to further attack. When the body generally is cold, old frost-bitten areas can be picked out by a curious feeling of numbness, a condition which persists through life and is noticed even in our own temperate climate.

A. H. MACKLIN, O.B.E., M.C., M.D. Manch.,
Surgeon to the Imperial Trans-Antarctic and the Shackleton-Rowett Expeditions.

THE BATEMAN APPEAL.

As already explained in THE LANCET, it has been felt that material assistance ought to be offered to Dr. Bateman to meet the legal expenses of his recent successful appeal against conviction and to make good the deficiency in his professional income. Accordingly, the Bateman Fund has been opened and lists of contributions have appeared in recent issues. We have received additional contributions as follows:—

	£	s.	d.
Already received and acknowledged ..	431	8	6
Dr. A. H. Burgess	3	3	0
Dr. F. A. Bearn	1	1	0
Anonymously	0	10	6
Dr. S. V. Pearson	0	10	6

Remittances should be forwarded to the Manager of THE LANCET, 423, Strand, W.C. 2, and made payable to the "Bateman Fund Account."

WOMEN'S HOSPITAL WORK.—A return compiled by the Medical Women's Federation shows that there are 321 hospitals where medical women are serving or are eligible in a professional capacity. In 308 hospitals women are either on the board of management, the house committee, or both. Three out of the 19 women's and children's hospitals in London are officered entirely by women—the Elizabeth Garrett Anderson, the South London Hospital for Women, and the Clapham Maternity; the New Sussex Hospital for Women is in the same position. In 26 similar provincial hospitals women are eligible on the staff. Practically the whole of the hospitals for women and children in London and the provinces now have women on their boards or committees.

Special Articles.

ROYAL COMMISSION ON LUNACY AND MENTAL DISORDER.

FURTHER SITTINGS.

(*Continued from p. 623.*)

THE sittings of the Commission were resumed on Friday, April 17th, Mr. H. P. Macmillan, K.C., the Chairman, presiding.

Scottish Lunacy Administration.

Sir Arthur Rose, honorary chairman of the General Board of Control for Scotland, and Dr. Hamilton Marr, a full-time Commissioner of the Board, attended to give evidence. The Chairman said the scope of the Commission's reference did not extend to Scotland, but the evidence to be now given was desired for the purpose of comparison and instruction. Sir Arthur Rose said the Board consisted of five members, including two full-time paid medical officers. From motives of economy, however, the Board was not at full strength. Scotland was divided into 27 lunacy districts, not necessarily coterminous with the counties. Not every district had an asylum; a district might send its mental patients to other asylums. There were 21 asylums in the country. If a district board did not include women, two women could be coöpted. As there was no Consolidating Act, lunacy in Scotland had to be administered under a series of statutes dating from 1857.

Functions of the Scottish Board of Control.

Sir Arthur Rose said there must be two statutory meetings of the Board each year, and the Board met as frequently as business needed. Meetings of local boards were held whenever an investigation was required. Each individual patient was seen twice a year. Dr. Marr said the patients were visited in their ordinary circumstances and surroundings. Whenever an interview was requested by a patient it was always granted. It was continually present to the minds of the members of the Board that they stood, in relation to the patient, in the position of *in loco parentis*. Usually the interview was asked in order to air some delusion, but sometimes a real grievance was ventilated, such as the objection of a middle-aged female patient to bathing in the presence of young women patients. This was subsequently remedied by providing screens. In the very few cases in which there seemed to have been abuse or assault by attendants, the medical superintendent of the institution was recommended to report the case to the Procurator-Fiscal, and if that official took it up the case was tried in open court. There had been only two such cases in the last five years.

On Jan. 1st, 1921, there were in Scotland 18,266 registered lunatics (9112 male and 9154 female); 2887 were private patients. There were seven royal or chartered asylums in the country, institutions in which patients must be received if ordered to go there. In four of the seven no pauper patients were admitted. At the beginning of 1921 these seven institutions contained 3595 patients. Many of the asylums of the district boards received private as well as rate-aided patients. In Scotland only one private asylum received patients for payment at a profit. This contained 51 patients. In the 11 lunatic wards of poor-houses there were 883 patients; 1863 mental patients were living with families in private dwellings, such as farm-houses. Dr. Marr said the feeling of the Board was against the idea of a profit being made out of the care of the insane. Answering Sir David Drummond, he said a number of the private patients undergoing treatment in Scotland came from England and Ireland, and there was ample accommodation for them. Sir Arthur Rose said he believed a contributory reason was the high state of efficiency at which the Scottish mental hospitals had arrived.

Observation wards for patients with incipient forms of mental disease were instituted by the Glasgow Parish Council in 1890. They were spacious and handsome. The duration of residence was at first limited to six weeks, except in special cases, for which an extension could be granted. It was arranged that the medical commissioners of the Board of Lunacy should inspect these wards at regular intervals and report upon them. In 1923 the duration of residence was extended to six months, and additional wards were added at the general hospital at Stobhill.

Procedure.

In Scotland the procedure was the same for pauper as for private patients; there must be two medical certificates, accompanied by particulars of the case. Dr. Marr thought certificates granted after consultation was preferable to two arrived at independently, and the risk of collusion was practically negligible. One of the certificates could be given by the medical officer of the institution.

The Chairman raised again with these witnesses the question of the adequacy of the provision for patients communicating with the outside world. Dr. Marr said the sheriff could inspect asylums at any time, so could three justices of the peace and representatives of the Poor-law authority; and, generally speaking, the opportunities for communicating with the outside world were adequate. General shops for sweets and refreshments had been provided for the convenience of visitors to patients, and at Edinburgh District Asylum facilities for reading and for writing letters were provided. If a visit was refused the fact must be recorded in a book, but Sir Arthur Rose said there was no such record. With regard to discharge, the medical superintendent of an asylum recommended patients for discharge when he considered they were fit for it; he could, indeed, himself discharge a patient. In the case of admission of patients to the licensed wards of poorhouses, these were received without any order from the sheriff, and one certificate sufficed.

Boarding-out.

A matter which was fully discussed was the boarding-out system as practised in Scotland. Mental patients who, however, did not longer need material medical attention, and to whom a country life gave the best conditions, were placed in suitable homes, such as farms and small holdings. This was not quite so popular now in Scotland as a few years ago, probably, in part, because the farms and gardens in connexion with asylums were now much better managed and cultivated. These patients felt much more freedom under these conditions, and they received on the average about 12*s.* a week. It was one of the stipulations that these patients should share the whole of the home life. There seemed little risk of such patients being exploited, such as by being overworked or underfed, or both, without the Board becoming aware of it. One to four such persons could be received into one house. It was an economic system, both directly and in the capital cost of asylums.

The Chairman asked whether incipient cases could be treated in Scotland without certification—i.e., for six months on the special certificate of a doctor. The reply was in the affirmative, and that it was an excellent provision. Sir Arthur Rose said the scheme had his distinct approval, especially as it enabled patients to be seen in the incipient stage of their illness. He contemplated more treatment of mental conditions on the same lines as physical diseases were treated in ordinary nursing homes.

Morningside Asylum.

On Saturday, the 18th, the sittings were resumed, when the witness was Prof. George M. Robertson, superintendent of Morningside Asylum, Edinburgh, and professor of psychiatry at Edinburgh University.

He said the Royal Asylum at Morningside was founded by Royal Charter and endowed by philanthropic persons, and was opened in 1813. It was not carried on for gain. It was bound to receive cases from the districts it supplied, and so answered to the statutory requirements of a public asylum. The last return gave 801 patients as resident in this institution, 143 of them being rate-aided. The tariff for private patients varied from £58 to nearly £2000 a year. The treatment was on the same basis for all, the difference was in the accommodation and the attendant staff. In Craig House there were no rate-aided patients. For 16 years the institution had been closely associated with the University, which was a great all-round advantage. To the students of medicine in the University he gave every year 30 lectures—i.e., ten more than were expected—and every student was compelled to attend them. This ensured that no graduate in medicine left the University without possessing a knowledge of the principles of psychiatry; the subject was too vast to expect more. He believed students in Edinburgh received more tuition in this subject than did those at any other institution in the world. He felt so keenly that the medical curriculum was now very heavy that he had not urged that psychology should be made a subject for the final, but he would do so if the attendance and attention at the lectures fell off. For those desiring to specialise there was the searching diploma in psychological medicine, and a certain number of students had taken that.

In answer to the Chairman, Prof. Robertson said there was no provision for the sheriff in Scotland seeing the patient, and he saw no object in it, as the sheriff was not competent by examination to say whether a person was sane or insane. It was, however, valuable to have the legal scrutiny of that gentleman with regard to the certificates tendered. There had been orders signed by sheriffs when the facts, from the medical point of view, were insufficient to warrant detention, yet the sheriff in question refused to withdraw the order. Perhaps six or seven certificates in a year were sent back because they were incomplete in some detail. Answering a question by Lord Russell, Prof. Robertson said the public were entirely dependent in these matters on the honour and honesty of the medical profession. He agreed, however, that if a case went before a third person the truth was more likely to come out.

Sir David Drummond asked whether the witness considered that the second certifying doctor should be an expert in mental diseases, and Prof. Robertson replied that this would obviate many patients entering an asylum at all.

The Chairman said that in Scotland the order made by the sheriff was of three years' duration, and the witness agreed, except in the cases under the last Act which were transferred to private care. The order could be kept going by periodic renewal. The Chairman pointed out that this order did not state that the patient was of unsound mind, but only that he was a person likely to benefit from continued residence in the asylum.

Voluntary Patients.

Prof. Robertson said that from 90 per cent. to 95 per cent. of the patients entering Morningside Asylum did so without any judicial order at all, but a number came in on the emergency certificate of a single medical man for three days' detention. At the end of that time there must be confirmation by a sheriff's order. Patients and relatives "jibbed" at the idea of going before the sheriff, who was associated in the mind of the people with summonses and prosecutions. He would like certification to be done away with altogether, though admittedly there would have to be some substitute for it. He would prefer for insanity to be dealt with as a notifiable disease. The authorities would then have some responsibility in regard to each case. Instead of the present judicial procedure, these patients should be medically treated and the fact notified to the authorities. Everyone seemed desirous of avoiding formalities, and that might be taken as an indication that the formalities were wrong. In answer to the Chairman, the witness said the majority of voluntary patients appreciated that they were being treated as such, while others were indifferent about that so long as they were kindly treated. 40 per cent. of all the private patients entering the voluntary hospitals of Scotland did so as voluntary patients, and the system had the support of the public opinion of the country. Indeed, in that country there was general satisfaction with the lunacy law and its administration. The Chairman said he had never been consulted about a case of alleged illegal detention in Scotland. The system of keeping patients in private houses for six months on one medical certificate had worked well. Most of the cases recovered within six months. If a patient did not recover in that time, it was necessary to get sanction from the Board of Control to continue the treatment of such patient indefinitely.

Female Nurses in Male Wards.

Prof. Robertson said his policy had been to have matrons at the head with full authority over all the nurses of both sexes, the matrons and assistant matrons having had a general hospital training. He declared that the presence of women nurses in male wards had reduced the tendency to roughness and had brought an improved tone and atmosphere into the place. He kept one male nurse in each male ward to deal with any impulsive tendency. Women had more power than men in subduing excitement in male patients. These female nurses approached their work from the professional standpoint, and the elements which seemed to the layman unsuitable and were dwelt upon by him did not come seriously into the picture in the nurses' minds. Sexual perverts were separated from the generality of patients, and were looked after by men. The advantage of having female nurses on the male side was conspicuous therapeutically, he said. But able-bodied male patients were best looked after by men, as they could work with them on the farm and be companions for them in their amusements. Male nurses did not now resent being supplanted by women, and no male nurse had been discharged on account of the changed procedure; it was a case of waiting for resignations of male nurses to occur in the ordinary way. He agreed that the Union of Asylum Workers was opposed to the policy. It did not represent a financial saving, as the staff was now proportionally greater than at any previous period. That was especially so in the case of night staffs. There was now one nurse to about every eight patients, and seven doctors in the institution besides clinical assistants. Arising out of various questions, the witness said there were but few epileptics in Scotland; he objected to airing courts, as they seemed too much like a prison; he believed greatly in open-air verandahs and, except in certain cases, in unlocked rooms. There were no padded rooms at Morningside, and no need for them had arisen. In fact, just as restraint was practised less and less, so did the need for it seem to have lessened. Hyoscine should never be used as a continuous treatment, nor with the object of getting rid of all the excitement; but one dose was of the greatest benefit in stilling the initial mania and preventing much struggling. He also advocated a careful investigation in every case of the cause of an excited outburst, as he felt sure there always was a definite cause. He gave some interesting incidents which bore this out.

The Commission resumed its sittings on Monday, April 20th, the Chairman presiding.

Hospital Treatment of Mental Cases.

The witness in the morning was Dr. John D. Comrie, senior assistant physician to the Royal Infirmary, Edinburgh, who spoke of early treatment of mental cases at the infirmary. Mental cases had been treated at the infirmary since 1738, and the

Chairman read a minute from the records of that year which stated that as there was no proper place in Scotland for the care of lunatics, it was proposed to build five cells for their accommodation; this number was later increased to 12. In a certain proportion of cases in the infirmary there were mental symptoms, and from about 1813 a special ward had been set apart for them. Most of these cases at that date were alcoholics, and with the diminution in number of such cases, more room was available for other kinds of mental cases. The patients treated here were not certified, but were cases of ordinary physical illness in whom mental trouble had supervened, either at about the same time or at a subsequent stage. Often cases were so sent because their medical attendant was in a difficulty as to what should be done for them, and they were too noisy to keep in the home. The patients in this department came in voluntarily, and were under no legal restraint; from there they might be sent either elsewhere for convalescence, or transferred to the asylum. In the event of temporary mental aberration as in pneumonia, whatever physical restraint was necessary was exercised by the physician, and he took responsibility for it, and if the act of restraint subsequently came before a court of law the physician would probably be exonerated from blame. If such a patient were allowed up in these circumstances and it caused his death, a serious question as to neglect would have to be answered to the coroner. The patients in question were taken in and treated gratuitously, and this system, in very many cases, prevented patients from ever reaching the stage at which certification was necessary. Moreover, whatever surgical or special medical treatment was needed was available on the spot. Doctors outside showed a tendency to leave to the medical officers of the institution the question of certification. He only saw about 5 per cent. of the cases in the out-patient department before they actually entered the hospital. Some slight cases were treated in the out-patient clinic. Prof. Robertson intended to organise a psychopathic clinic. The visitation of friends here was on parallel lines with that in the general institution, and this had much influence in preserving the general hospital—as opposed to the asylum—atmosphere. In illustration of his view as to the restraint necessary, he said sometimes a patient with a fractured leg removed the splint and threw it under the bed, and raised the leg to look at it; and then it was necessary to fasten leg and splint to the bed, and limit the use of the hands. If human restraint were carried out, patients would continue to resist it, but they soon found it was useless to resist mechanical means, and soon desisted. Every effort was made to prevent noisy patients disturbing others. For this purpose it would be an advantage to have more rooms. 66 per cent. of the melancholic cases had attempted suicide before admission, but no such attempts were made while they were under care. In this department there were 21 patients, and for these there was a sister-in-charge, eight female nurses, and three male orderlies or porters. Special help in addition was always available.

Classification.

Sir Humphry Rolleston and Mr. Snell questioned the witness as to any detrimental effect on patients who needed all their nervous strength to recover from being in the same ward with noisy and more acute cases, and Dr. Comrie replied that this was so to some extent, but every effort was made to keep them apart and to diminish such risk. On the general run of cases, he said, in reply to a question by Sir Ernest Hiley, provision for 50 beds would suffice for Edinburgh. Most patients stayed about three weeks, they could be kept six weeks. In 1853 the alcoholic cases treated were 60 per cent. of the whole, and in 1923-24 this had fallen to 20 per cent., and the cases discharged sufficiently well to return home were 72 per cent. of the total, 17 per cent. being transferred to the mental hospital. Only five cases entered the mental hospital as voluntary patients. 66 per cent. of the cases of melancholia and depression had been so severe as to lead to attempts at suicide, but after a few weeks treatment 60 per cent. of them were well enough to return home, and many of them were cured, only 40 per cent., therefore, entering an asylum. But it must not be assumed that all the patients in that department were at any time certifiable. There were not many readmissions, and most of those were recurrent epilepsy. The types of cases which gave the best results were confusional insanity due to exhaustion or to toxic states, and the mental derangement occurring in the course of syphilis. Summarising his experience in a general way, he said that slight and undiagnosed cases of mental disorder admitted to a general hospital might be expected, in about 60 per cent. of cases, to recover sufficiently to return home after six weeks' treatment. Treatment in a general hospital was particularly valuable in expediting recovery because of the relative ease with which physical conditions (infective, exhaustive, or reflex) as partial causes could be discovered in a large proportion of the cases of confusional mental states, melancholia and psycho-neuroses. He also considered that the association of mental patients with those who were normal mentally in a general hospital expedited recovery and established public confidence.

Mr. Snell questioned the witness as to the reason for the decline in the alcoholic cases, and in his reply he said among the contributory causes were the high prices of spirits, the amount of unemployment, and the discipline which large numbers of the people underwent in the army. Still, the alcoholic cases were not now so severe as formerly.

Avoidance of Certification.

Dr. John Carswell was the last witness to speak on Scottish lunacy practice. He said he had been in practice and lunacy administration since 1878, mostly in Glasgow. He was now connected with the Ministry of Pensions in London. He said he was led to make his suggestion for the provision of treatment for early cases by the fact that systematised study of mental disorders was entirely neglected at that date until the patient actually had been certified and appeared at the door of an asylum. He strongly felt the need for placing incipient mental cases under care without the need of certifying them, in what had come to be known as observation wards. On account of the legal and other pitfalls connected with the subject there should be appointed for this work a medical officer who would be able to carry out his duties along the lines indicated. Out of the many thousands of cases which had passed through his hands while he held the office in Glasgow, the Parish Council had not to answer a single letter of complaint. The certifying doctor should, he thought, be a specialist in mental disease, but he did not suggest the general practitioner was inefficient. He attached great importance to visitation of the patient whose case was reported upon at his own home and in his ordinary circumstances and surroundings. In the later portion of his time at Glasgow, the population dealt with numbered 600,000, and 80 per cent. of the people were those who, if they had mental illness, would require public assistance. Cases reported by the inspector of the poor were, in most instances, seen by Dr. Carswell in their own homes on the same day. In reply to a question, he said his work was remunerated by a fixed salary; there were no fees. The 50 beds under his care at the Eastern District Hospital were at the date in question the only ones available for the kind of mental cases under discussion, and they were adequate for the cases then, as medical and public opinion had not been converted favourably to the idea. With regard to the question of detention of such patients, he agreed with the attitude of mind expressed by Dr. Comrie. If a patient expressed a determination to commit suicide at the first opportunity, Dr. Carswell said he would certify him in order to prevent this.

He preferred to do this rather than deprive the clinic of its valuable atmosphere of freedom. More than half the cases treated in this department for mental disturbance succeeded in escaping certification altogether.

Mrs. Matthews asked the witness whether there was any alternative available to reporting cases to the inspector of the poor, and he replied that he would much prefer that the doctor should report to the health authority, or, still better, to a mental board of health, as suggested by the Medico-Psychological Association. On the suggestion of Sir Humphry Rolleston he agreed to submit a memorandum on the subject.

PROCEEDINGS OF THE ROYAL COMMISSION ON NATIONAL HEALTH INSURANCE.[*]

(Continued from p. 840.)

EVIDENCE OF THE JOINT COMMITTEE OF APPROVED SOCIETIES.

Mr. F. W. Daniels, Chairman, and Mr. P. Rockliff, Secretary, gave evidence on behalf of this body, which consists (Q. 8015) of Associations of a specialised type—viz., Deposit Friendly Societies, Holloway Friendly Societies, Dividing Friendly Societies, the General Federation of Trade Unions, the Co-operative Group of Approved Societies, the Catholic Group of Approved Societies, and associations of small societies.

The Oxford Resolution.

(App. XIV., 3, 4. Q. 8023, &c.) A good deal of the evidence bore reference to a resolution of the National Conference of Friendly Societies, the Oxford Resolution, from which this Joint Committee dissociated itself. It was summed up by the witnesses (8024) thus: The merger of all existing forms of public medical service, including medical benefit under National Health Insurance, into one national medical service, thereby creating one unified organisation for the prevention and cure of disease. The witnesses considered that the—

> extension and administration of medical benefit as outlined in the Oxford Resolution . . . would lead . . . to an impression (in the minds of the patients, at any rate) that, as regards attendance, it was of the nature of a Poor-law medical service, and, as regards drugs, that they were of the "stock-pot" variety.

The misgivings as to the present medical service would, in the opinion of the Joint Committee, be considerably magnified in the system proposed.

(Q. 8160.) It was suggested that the executive of the National Conference of Friendly Societies which brought forward the Oxford Resolution were stampeded by Mr. Alban Gordon (whose evidence before the Royal Commission has recently been summarised in these columns).

The Panel Service and the Question of Extension.

(Q. 8026–41.) In the opinion of these witnesses, the panel service in the provinces, whilst not perfect, is reasonably efficient. As regards London, the service, in their view, is very far from being wholly satisfactory. The general trend of their evidence seemed to be that the London Panel Committee was to blame, and reference was made to the recent disputes in London about the action of the Medical Service Sub-committee.

> The Panel Committee in London seek to protect the scallywag, who, I have no doubt it will be said, will be found in all professions, and they carry it to extremes *in London in changing their representation upon the Committee* and in seeking to deprive the Medical Service Sub-committee of the judgment of an independent chairman.

Asked whether they would propose to scrap the Panel Service, and if not, what would be the alternative, they replied that they were hopeful that it might be still possible to improve the existing service. With regard to extensions of the Medical Service, the following rather cryptic statement is made:—

> (App. XIV., 24, 25.) The Joint Committee desire to see the benefit given by the Act of 1911 fully conferred upon the insured—i.e., "*adequate medical attendance and treatment*"—and not the restricted form of (domiciliary) medical benefit defined by the regulations. Given the former, there is no need separately to specify here the nature of the extensions desired in the latter.

No Free Choice under a Whole-time Service: The Regimentation of Women.

(Q. 8185–8200.) Asked why a whole-time service as contemplated by the Oxford Resolution should necessitate an allocation to one doctor without any free choice, and therefore involve what was described in the evidence as the "regimentation" of women, the witnesses said that that seemed to follow from the appointment of whole-time doctors for particular areas.

> If you are going to have so many whole-time paid medical men under a National Medical Service in any area as to give real freedom of choice, then you are going to make it financially impossible to set such a scheme on its feet.

Medical Benefit to Dependants not Recommended.

(App. XIV., 1, and Supplemental Statement.) The Joint Committee consider it undesirable to press at this present time for the extension of medical benefit to dependants of insured persons. They do not think that there is a clear demand for it from the insured persons themselves, and notwithstanding that "panel medical opinion has crystallised" in favour of such a scheme, they think that it is impracticable on financial grounds and also that it would throw an undue burden on the profession, especially in congested areas.

Petty Surcharges for Excessive Prescribing.

(Q. 8029.) Speaking again particularly of London Mr. Rockliff said:—

> As regards drugs, miserable petty surcharges have been made upon doctors because in their discretion, which would be unchallenged when dealing with a private patient, they prescribed a 5-grain pill and it was alleged—I am speaking from personal knowledge—that a 3- or 4-grain pill would have been as efficacious. It is a sin, too, for a flavouring essence to be put into an insured person's medicine. Insurance bandages too—I think it is altered now, but previously it was so—were to be drab or grey, not white as for a private patient.

Pooling of Funds.—Pure Theft.

(Q. 8179.) The pooling of societies' funds would, said Mr. Rockliff in one answer, be "pure unadulterated theft." (Q. 8214–8365.) The evidence generally suggests that there would be a clear breach of faith if any proposals were made to take the surpluses of the stronger societies and give them to the weaker.

> (Q. 8298.) The fact that by a selection on the part of the insured persons different results were going to accrue was patent to everybody in 1911. It was patent to trade unionists, and if they induced their members to segregate themselves in occupational societies, that was, at any rate, the result of their wrong advice.

As to this, it was suggested to the witness (Q. 8301) that 14 years' experience of fact might cause Parliament to alter a good deal of what in 1911 was simply theory.

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[*] In previous articles the proceedings of the Commission were reported under the following headings: Introductory Note: The Scope of the Insurance Scheme (see THE LANCET, Jan. 31st, pp. 247–8); The Provision of Medical Benefit (Feb. 7th, pp. 301–3; Feb. 14th, pp. 355–6; Feb. 21st, pp. 403–5); Financial Provisions of the Act (Feb. 28th, pp. 454–7); Medical Certification and the Regional Medical Staff (March 7th, pp. 508–9); The Approved Societies and the Money Benefits (March 14th, pp. 564–5; March 21st, pp. 623–4); Evidence of the Hearts of Oak Society (March 28th, pp. 677–9); Evidence of the National Conference of Industrial Assurance Approved Societies and of the Manchester Unity Approved Society (April 4th, pp. 731–3); Evidence of Independent Order of Rechabites, of National Association Friendly Society, and of Miners' Societies (April 11th, pp. 784–6; April 18th, p. 839); Evidence of Mr. Alban Gordon (April 18th, pp. 839–40).

References to the printed statements issued as appendices to the reports of the oral evidence are given thus: Section A, para. 69, is shown as "App. A. 69." and references to the oral evidence thus—Q. 1369.

Additional Treatment Benefits.

(App. XIV., 26.) The Joint Committee are prepared to support the extension of the list of additional benefits so as to enable Approved Societies to make monetary grants to enable their members to secure massage, radiant heat, and other electrical treatment, blood tests, X ray, and similar advantages in dealing with illnesses. They are opposed, however, to any transfer of treatment benefits out of the hands of the Approved Societies.

(App. XIV., 27.) As regards treatment benefits generally, whilst special considerations might be advanced in regard to a benefit given nationally as a normal benefit under the Act, the Joint Committee are opposed to any transfer out of the hands of members of Approved Societies of the administration of the present system of monetary grants in aid of treatment.

Dental Benefit.

(App. XIV., 28–31 and Supplemental Statement.) The only treatment which appears to the Joint Committee to justify an effort to secure it upon a national basis is probably dental benefit. Even then it would, it is believed, still be desirable for societies to continue to administer it. Such a benefit, if given nationally, would require to be given free of cost to the insured to enable the ill-paid, and not merely the well-paid, among the insured to obtain it.

In view of the possibility of the present valuation resulting in the very large surpluses which seem probable, it would appear that 100 per cent. dental service is not an impossibility, if preference is given to it over other additional benefits, and the Joint Committee are not impressed by the suggestion that the dentists available are inadequate, although (App. XIV., 43) this "might be true of qualified dentists."

In their supplemental statement of evidence (35), the Joint Committee say :—

> Should the surplus be found to amount (when the 1923 valuation results are known) to the figure now suggested, the Joint Committee would doubtless consider the desirability of utilising such part of that surplus as is requisite to provide a 100 per cent. dental service in priority to (*a*) a reduction in the weekly contribution, or (*b*) an increase to a limited extent in the normal rates of cash benefit, which were advocated in their original statement.

The Future of Insurance Committees.

(Q. 8724–5.) In later evidence on dental benefit, the witnesses said that the whole cost of this benefit might be estimated from the experience of some societies at from 5*s.* 6*d.* to 6*s.* 6*d.* per insured person—more probably the higher figure. If by making this a normal benefit is implied meeting the full cost of the benefit,

> and a member's medical card, for example, entitled him to go to both a dentist and a doctor, it certainly could be argued that Insurance Committees might be entrusted with the work; but if dental benefit as a normal benefit is anything short of a 100 per cent. service, in our judgment Insurance Committees are conclusively ruled out.

(Q. 8729.) With regard to the work of Insurance Committees generally, Mr. Rockliff said :—

> We are not here to press for their annihilation, but at the same time we do not lend any support to the effort to preserve their lives by stealing work which is being better performed by other persons at the present time.

EVIDENCE OF STOCK EXCHANGE AND LLOYDS' HEALTH INSURANCE SOCIETIES.

Evidence on behalf of these Societies was given by Mr. E. E. England and Lieut.-Commander E. G. Holdway, respectively.

Advocacy of Insured Persons Making Own Arrangements for Medical Benefit.

The principal matter upon which they made submissions to the Commission was as to the medical service.

> (App. XV., 6 8.) The Panel Medical Service has always been most unpopular with a large number of our members. We have had many complaints from insured persons who feel that they are not receiving the attention and treatment that was promised to them, that the doctors agreed to give, and for which the members have paid.

The witnesses advocated :—

> The continuance of the Panel Medical Service with an amendment of the Medical Benefit Regulations, to allow of the unrestricted right of every insured person to make his own arrangements for medical benefit with a doctor who is not on the panel.

The witnesses pointed out that although Insurance Committees have power to allow insured persons to make their own arrangements, the conditions are so strict that only a few cases are allowed.

(Q. 8455 80.) The witnesses were asked whether such an extension of the "own arrangements" method, as they suggested, would be consonant with the idea of insurance. They replied that the member would exercise the option, knowing perfectly well that only a portion of his doctor's bill would probably be met, and that the balance would remain for him to pay.

> I can see no reason why the principle of insurance should be incompatible with private arrangements. There are many insurance companies which issue policies against sickness, and the insured makes his own medical arrangements. There should be obviously a certain scale, and the member would know that he had to cover any excess from his private resources.

Although it was agreed that the majority of the doctors are on the panel, and that many of the doctors from whom members of these societies obtain treatment as private individuals, were nevertheless on the panel, it was thought that the fact of a doctor being under a contract of insurance made a marked difference in his outlook.

> (Q.) Your suggestion is that the doctor does not realise his responsibility to his patient?—Yes. There is also the psychological aspect of it. The doctor knows he has a certain number of people on his panel for which he is going to receive a certain sum of money, and any extra private patient means extra money for him. He knows very well that he has had that income assured to him, and without wishing to say a word against the medical profession, there is the human element that naturally comes in. He may be tired, he may be overworked, but if a private patient comes and there is more money coming in, he gives that person better treatment. There is no doubt about it in many cases. I have had cases brought to me, and I am quite satisfied that there are many cases where they have had different treatment altogether.

With regard to the contrary suggestion that as regards his panel patients the doctor feels a greater responsibility, the witness replied :—

> I quite agree there is a lot to be said for your argument, but between that degree of neglect which a person may feel and the degree of neglect which one can bring before an Insurance Committee as a complaint, there is a very wide margin.

(Q. 8523.) The witnesses wished to avoid making sweeping charges against the medical profession and, indeed, they considered that the panel service was considerably improved.

> It is getting better and better. When the Act first came into force there was very great prejudice against it, and that still sticks in the minds of a large number of our members.

Other Treatment Benefits.

(Q. 8430–40.) The members of these societies are mainly selected lives, so that the societies carry smaller risks, and moreover a considerable number do not claim the ordinary benefits to which they are entitled during sickness. This enables these societies to give other very substantial benefits—*e.g.*, full dental treatment, which includes examination, scaling and gum treatment, extraction (with or without anæsthetic), filling, stopping, crowning, and the supply of artificial teeth where needed. Also optical treatment: the members go to an optician in the City, and the full cost of pince-nez or rimless glasses or astigmatic lenses are allowed; gold frames, however, are not provided. The societies also provide medical and surgical appliances, either through the Surgical Aid Society or a private surgical instrument maker.

They would resent the loss of these benefits under a pooling scheme, and pointed out that city clerks have never yet been favourable to National Health Insurance, and it was important that nothing should be done to increase their hostility.

EVIDENCE OF THE GROUP OF CATHOLIC APPROVED SOCIETIES.

For this group Mr. Joseph Moss and Mr. C. H. Waring gave evidence. (App. XVII.) This evidence comprised the following points:—

1. That there was an undue drain on the Benefit Funds owing to women members' claims before and after confinement, particularly in view of the lax way in which many doctors issue certificates for "pregnancy" and "debility following confinement" when the women to all appearances are not incapacitated from work.

2. That surpluses should be applied to treatment benefits rather than cash benefits.

3. That in meeting the cost of such treatment benefits there should be "voluntary coöperation between societies and branches, and that they were strongly opposed to Insurance Committees having the administration of these benefits.

4. That, as most of the cases submitted for examination arise from careless and unsatisfactory certification, the cost of the regional medical officers should come from the Benefit Fund.

The Personal Touch in Administration.

(Q. 8660–1.) The witness was asked what exactly was the personal touch in branch administration of which a member of the Commission said they had "heard such a lot" during the proceedings, and what it amounted to, if it could not be translated into actual cash or treatment. The witness did not attempt a definition. He said, however (Q. 8720), that under the branch system they were in fact in closer touch with the members than under any other system.

The Black Sheep.

As to the panel system generally, the main complaint appeared to be with regard to looseness of certification in certain cases, although (Q. 8676) the society felt such difficulty in preparing cases adequately for the Medical Service Sub-committee that they had not made use of the complaints machinery. It seemed to them that when society representatives got on to an Insurance Committee they lost their interest. By way of illustration, they suggested (Q. 8682) that many town councillors would be bankrupt in about a fortnight if they ran their own affairs as they run the affairs of the city.

(Q. 8705.) With regard to certification they said:—

> We have people coming on the funds through chronic bronchitis who come week after week for the benefit, and they are able to be out in all kinds of weather. We find that certain doctors specialise in a particular complaint. We know that in the case of one man nine-tenths of his certificates will be for rheumatism, and in the case of another man nine-tenths will be for bronchitis.

Generally, however, the doctors are trying to carry out their duties under difficult conditions, and it was to be expected that there would be some black sheep in the fold.

OPHTHALMIC HOSPITAL OF THE ORDER OF ST. JOHN OF JERUSALEM IN ENGLAND.—The report of this institution for the year 1924, signed by the Warden, Lieut.-Col. J. C. Strathearn, M.D., shows that the number of new patients seen was 16,225, and that of the total consultations 75,566. The number of patients admitted to the hospital was 1676 and the number of operations performed 4203. Among new cases the percentage of blindness in one eye was 8 per cent. and in both eyes 3·8 per cent., acute conjunctivitis being the most frequent cause, for during the year under notice the disease was widespread and virulent, though an improvement, now of five years' duration, was maintained. Trachoma, the chief scourge of Palestine, and largely associated with poverty and squalor, still shows a high incidence, and accounts for much of the work in the out-patient department, where the sufferers formed 83 per cent. of new cases. Until the social standards of the people are raised very little can be done for them in regard to this disease, but encouraging results follow the systematic treatment of children at school age. The majority of operations in the hospital, 66 per cent., was for the relief of trichiasis. The sanitation of the hospital is receiving the consideration of Dr. J. A. Henderson, the P.M.O., Jerusalem.

NOTES FROM INDIA.

(FROM AN OCCASIONAL CORRESPONDENT.)

Coöperation and Public Health in Bengal.

AN interesting method of combating malaria, as well as kala-azar and cholera, by means of coöperative public health societies has been put into practice with considerable success in the Province of Bengal, where malaria takes a heavy toll. The scheme originated with Dr. G. C. Chatterjee, formerly Assistant Bacteriologist to the Bengal Government, who in 1918 was able, in three villages which had been decimated by an epidemic of malignant malaria, to organise three Coöperative Anti-Malarial Societies and to get them registered under the Coöperative Societies Act. Subsequently he founded a Central Coöperative Anti-Malaria Society "to devise and carry out measures based on coöperative principles for the eradication of malaria from Bengal," which was registered and came into existence on June 5th, 1919. The outline of the scheme is as follows. The Central Society exists to organise and create a network of Anti-Malaria and Public Health Societies on a coöperative basis throughout the villages of Bengal. Each of these societies is an autonomous body which raises funds by subscription from amongst its members. The Central Society acts as an advisory body to these rural societies, and may assist them financially. It places at their disposal the result of recent researches on malaria, kala-azar, cholera, and other preventable diseases. By February, 1924, as many as 120 societies had been organised. The anti-malaria measures which a society is required to carry out are: (1) filling up ditches; (2) improving drainage; (3) preparing a map of stagnant pools and regularly kerosinating them by volunteer help; (4) clearing undergrowth in the village; (5) administering quinine to all malaria cases in the village, and (6) keeping the fever index of the village systematically. Each society provides a duly qualified medical practitioner on a subsidy basis, whose duty it is not only to treat cases of illness, but also to instruct the people in preventive methods, and to establish a coöperative dispensary in the village itself or within easy reach of it. For organising public health societies and for educating their members, the Central Society carries out propaganda by means of magic-lantern lectures, leaflets, and a monthly journal, while the kinema and the stage are also pressed into service. The society is very strongly supported by the medical profession. Not only do the majority of its members belong to the profession, but it has also enrolled about 130 medical volunteers, at least half of whom are fully qualified practitioners, the rest being senior medical students. It enjoys good financial support, including a grant from Government, which in 1921 and 1922 was Rs.5000 and in 1923 Rs.10,000. The organisers of this system are to be heartily congratulated in their efforts to awaken the sanitary conscience of the village population of Bengal, and to promote the idea of self-help in local sanitation. It is to be hoped that such methods will in the near future be more widely extended throughout India.

Administration Report of Madras City for 1923–24.

This report is a somewhat belated document, but it contains details which are even now worth mentioning as Madras is the seat of Government and the premier city in the Presidency. The number of registered births was 22,925, giving a birth-rate of 44·6 per mille against an average rate of 38·8 for the previous decennium. As might be expected, there was the correspondingly high death-rate of 37·8 per mille, as compared with 42·7 for the previous year, and 46·6 the mean for the quinquennium ending 1922. In two divisions in the north of the city the recorded death-rates were 53·7 and 111·0 per mille respectively. It seems more than likely that in these areas the people are suffering from a recurrence of the malaria epidemic of 1912–13 which began in those same divisions. The death-rate from infectious diseases was 15·5 per mille, from dysentery and diarrhœa 7·2 per mille, while it is reported that small-pox, influenza, and relapsing fever were present only in sporadic form. Malaria is said to be responsible for 3·9 per cent. of the total deaths, a figure which has gradually increased during the last three years. About two years ago the anti-malarial staff, or the remnant of the staff left from 1912–13, was disbanded on grounds of economy. This step may prove to be a costly one to the corporation and the people. As regards child welfare work, a new centre was opened in the western area of the city and one more woman doctor was employed. Five pupils passed out of the school for health visitors, and the number of such visitors employed by the corporation rose from nine to 16. The midwifery service of the scheme continues to be popular, the total number of cases brought to the staff being 5820, as compared with 5549 in the previous year. The infant mortality-rate for the whole city was 251 per mille, which it is pointed out is the lowest ever recorded in Madras. The mortality-rate for children under the child welfare scheme was 202 per mille, but these two figures are neither of them matters for congratulation, and much more will have to be done before any remarkable reduction in the rates can be expected As regards conservancy, while the corporation has undertaken the private scavenging of a part of the city no appreciable improvement has been effected in the general conservancy of the town, and this branch of the administration requires closer supervision.

Bombay Children's Act.

Hitherto it has been a reproach to India that its protection of children was hopelessly deficient, but the Provincial Governments are now taking the matter in hand and a Children's Act has been drafted by the Bombay Government. The Bill proposes *inter alia* to make it an offence: (*a*) to be drunk in a public place while having charge of a child apparently under 7 years of age; (*b*) to give any child (except in case of sickness) apparently under the age of 7 years any intoxicating liquor; (*c*) to sell tobacco to a child or young person, and power is given to the police to seize any tobacco in the possession of a child or young person found smoking and to search any boy so found; (*d*) to incite or attempt to incite a child or young person to bet or borrow money, or to take an article in pawn from a child or young person.

National Health and Baby Week in India.

The health and baby week has been held for a second time, and it is probably correct to say that in recent years no movement has so quickly and successfully caught the imagination of the people. From Delhi, where Lady Reading opened the exhibition and baby show, and all over the country reports have been received demonstrating the success and the enthusiasm with which the week was celebrated. Each province was permitted to fix its own dates for the week to suit local conditions. Large sums of money were subscribed all over the country for prizes and for feeding the mothers and infants attending the celebrations. Last year the first baby week in India was held, and there can be no doubt that this year has easily eclipsed the efforts of 1924. The problem of carrying out health propaganda work amongst a conglomerate population such as one finds in India is an enormous one owing to the expense of preparing every leaflet and every poster in a dozen or more languages, but a very good start has been made, and if only more money were available a great deal more could be done as most local governments are in entire sympathy with this kind of work.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

Bayer "205" and Sleeping Sickness.

Dr. Tanon has recently communicated to the Academy of Medicine the results obtained on an expedition to the Cameroons to investigate the treatment of human trypanosomiasis with Bayer "205." While admitting that the value of this product as a trypanosomicide is at least equal to that of other substances at present in use, he considers that the German preparation is not so innocuous as has been stated, for it has been found to have a toxic action on the renal epithelium. It causes albuminuria, which, although in most cases it clears up spontaneously, may lead to death from uræmia. The effect of the drug is to cause the trypanosomes to disappear very rapidly between the third and the twenty-fourth hour after the first injection. They do not reappear in the majority of cases, but some relapses have been recorded. The cases of relapse persist for a fortnight, then the parasites disappear again and do not return. Bayer "205," therefore, is not a definite cure, at least in human patients. It has no action on the parasites in the cerebro-spinal fluid when the nerve centres have been attacked, unless an intra-spinous injection is carried out, which is not a procedure to be recommended. In brief, Bayer "205" has not been found, at the present time, to be superior to other drugs in actual use, so far as human infection by *Trypanosoma gambiense* is concerned. Further, the criterion of a drug which claims to cure sleeping sickness must be its power to cause a meningeal lesion to disappear —that is to say, which can cure patients in the third stage of the disease.

A Small Epidemic of an Undefined Nature.

Several doctors of the Pas-de-Calais have recently observed, in one of the devastated regions of that department, a small epidemic of a malady which they have not been able to classify. Twenty definite cases were recorded a week after the first case was observed. The illness commences abruptly, the patient complaining of tiredness, headaches, and giddiness. Occasionally consciousness is lost, the respiration becomes rapid, the appearance haggard, and nervous twitchings occur. Then an eruption appears in the form of extended red patches, slightly raised and separated from each other by areas of healthy skin. These patches, which are erythematous but not pruriginous, are transitory, and a few hours after their disappearance small vesicles filled with a clear liquid take their place, which in turn dry up and form little epidermal flakes. The eruption definitely disappears within three or four days and leaves no trace. A very slight degree of fever is present. The majority of the patients were glaziers working in the neighbourhood of a carbide factory, where a lime kiln is in operation. The symptoms which have been observed do not seem to be caused by any poisoning arising out of the patients' occupation, nor can they be traced to the drinking water or to food. It is a question whether it may be an abnormal type of influenza, or whether the malady bears any relationship to hiccup or to encephalitis lethargica, all of which are prevalent just now in that area.

Hygiene and the Budget.

At the instigation of Dr. Léon Bernard, professor of hygiene at the Faculty of Medicine of Paris, the Academy of Medicine has protested against the reduction of monies available for public health purposes which was recently proposed by the Government, and the following resolution has been passed unanimously: "The Academy of Medicine, concerned at the proposed reduction of 132 million francs in the Public Health Estimates, considers it necessary to direct with some insistence the attention of public authorities to the disastrous consequences which such a measure would entail, the effect of which would be to impair seriously the initiative of public and private health organisations which have already produced tangible results in the fight against tuberculosis, syphilis, and infantile mortality. This apparent economy would be more than counterbalanced by a heavy loss in human life and an acceleration of the depopulation of France."

IRELAND.

(FROM OUR OWN CORRESPONDENT.)

Irish Medical Committee.

AT a recent meeting of the Irish Medical Committee a resolution was passed by a large majority in favour of the continuance of the Medical Register as at present. A discussion took place in regard to the inadequacy of the fees given for the registration of births, deaths, and marriages. In most districts in Ireland the Poor-law medical officer is registrar, and the fees allowed are 1*s.* for each entry of a birth or death, and 6*d.* for an entry of a marriage. These are much less than the fees allowed in Great Britain for similar duties. Recently registrars have been invited to undertake additional clerical duties without additional remuneration. The Committee passed a resolution asking the Registrar-General to take the necessary legislative steps to have the fees for the registration of births, deaths, and marriages increased to 3*s.* for each entry. Resolutions dealing with the appointments of surgeons to county hospitals were passed as follows:—

(*a*) That the minimal salary for a county hospital surgeon be £1000 per annum.

(*b*) That the county surgeon should be permitted to engage in consultative practice only.

(*c*) That in both county and district hospitals only patients for whom the State is statutorily responsible should be admitted for treatment.

(*d*) That if private patients are admitted they should be treated in a hospital apart from those entitled to treatment by the State, and that their private medical attendants should have the right to attend such patients with the county surgeon.

The Committee also reaffirmed its adherence to the British Medical Association scale of salaries for whole-time medical officers engaged in public health work; and it asked for the early publication of the interim report of the Committee of Inquiry into National Health Insurance and the Medical Services.

The Irish Free State and the Medical Register.

The Minister of Local Government and Public Health recently invited representatives of the licensing bodies and of professional organisations in the Irish Free State to meet him in conference to discuss the measures that should be taken to provide for the future control of the medical profession. Mr. Burke (the Minister) pointed out that the present Act would run only until February, 1926, and he invited the opinions of the members of the conference as to the nature of the legislation that should take its place. Those present were unanimous in urging that the existing status should not be disturbed, and that the Government of the Irish Free State should exert itself to ensure that a common register for Great Britain and Ireland should be maintained as hitherto. Mr. Burke expressed himself as in accord with the views of the conference, and stated that he would put these views before the Executive Council. He asked that a small consultative committee might be appointed by the conference to assist him in matters of detail as occasion might arise. The following were then nominated as a consultative committee: Senator W. O'Sullivan, Sir James Craig, Mr. T. Hennessy, Mr. R. C. B. Maunsell, Prof. A. F. Dixon, Dr. D. Coffey, and Dr. E. Magennis.

Correspondence.

"Audi alteram partem."

THE GOLD TREATMENT OF TUBERCULOSIS.

To the Editor of THE LANCET.

SIR,—On reading the preliminary report by the Medical Research Council on this treatment, published in your issue of April 18th, I cannot help making comparisons with the results obtained by the use of tuberculin when it was revived 10 or 12 years ago, and especially in cases where reaction-producing doses were used. By the latter method many strikingly successful results were obtained, but as soon as the "reaction" method became used for the treatment of patients in dispensaries it fell into discredit, and deservedly so. When used under strict sanatorium conditions the reactions usually subsided in a few days and no very unpleasant sequelæ were produced as a rule; certainly none comparing with the severe jaundice or continuous hiccough described as occurring during the "gold" treatment. Nor were the cases of uncontrollable reactivation of the disease at all frequent when the patients were kept absolutely at rest during the reaction. One might reasonably suppose that if the 30 cases treated by "gold" had been intelligently treated by tuberculin reactions, the results would have been better. The use of tuberculin without reactions might have given even better results without the disasters if persisted in for a longer period.

In the treatment of tuberculosis the purely academic scientific atmosphere is not the ideal one for obtaining good results. In the hands of a sceptic everything fails except perhaps artificial pneumothorax now and then. The psychic effect of any new remedy is usually a favourable one, but one feels that during the gold treatment reaction stage many of the patients must have had their faith sorely tried, especially the exfoliative dermatitis victims. Some years ago I used a solution of normal saline and 0·5 per cent. carbolic acid, and in order to produce an exactly equivalent psychical atmosphere, called it a new tuberculin (O.K.) so that staff and patient were deceived. A course of injections in a series of patients was given, and four out of eight claimed a definite improvement (and showed it), two were uncertain, and two definitely negative. Probably the same result would have occurred with high dilutions of any tuberculin.

I think that the discrepancies noted amongst different workers can be accounted for by the difference in the psychical atmosphere in which the remedy was used and the type of case treated.

My point in writing this letter is to express the hope that a drug with such dangerous possibilities as sanocrysin will not be launched on the profession as a remedy without more experimental work than it has received at present.

I am, Sir, yours faithfully,
W. O. FOWLER,
Medical Superintendent, Pinewood Sanatorium.
Wokingham, Berks, April 20th, 1925.

To the Editor of THE LANCET.

SIR,—The preliminary report of the Medical Research Council on the treatment of tuberculosis by ".sanocrysin" (THE LANCET, April 18th, p. 833) is not of such a nature as to encourage either physicians or patients to try this so-called therapeutic agent. The benefits obtained are very doubtful, and benefit, when obtained, can be easily explained on the assumption, which seems to be warranted from the clinical histories of these patients, that this substance has the power of causing focal reactions, which, as is well known, may in a few suitable cases produce benefit. The same thing happened during the tuberculin period, but the harmful results in the case of the gold preparation are much worse, for besides causing an increase of the disease this preparation seems to be a deadly poison.

There seems to me to be some confusion of thought shown in the method of approaching this problem. I understand that the idea of Prof. Möllgaard is to provoke a reaction in the tuberculous lesion with the hope that some kind of repair may take place, presumably by fibrosis, for it is very dangerous to try and produce exfoliation in pulmonary tuberculosis unless the disease is very limited. In order to mitigate too great a toxæmia I understand that an anti-serum has been prepared to neutralise the effect of the toxins produced at the site of the lesion. We who have been engaged in sanatorium treatment for many years have been for the most part engaged in trying not to rouse up lesions to greater activity, but to try by rest and other means to reduce the toxæmia. It has occurred to me that in conducting a research of this kind it would be well first of all to try this serum upon cases which have not been subjected to the gold treatment, but which are already toxæmic, for if it should be found that toxæmia could be controlled we should have one of our chief difficulties removed. I would observe in passing that when any substance which has the capacity to stir up lesions is being used when a reaction has been produced, the remedy must be stopped forthwith, and if after the reaction has passed off the patient is worse, which, in my experience, is generally the case, then the remedy should be stopped at once.

I would suggest that if this method of treatment be persisted in, the dose be reduced a hundred times at least, the intervals lengthened, and a rectal temperature be taken in every case both during and before the administration of the drug. We have found here that T.R. given in dilutions of 1 in 100,000,000, commencing with 0·1 c.cm., are quite safe and have in a considerable number of cases the power of reducing the fever of persistently febrile cases, the dose and the intervals being gauged by a carefully taken rectal temperature. The same is true of colloid of calcium, in which an efficient dose in some cases may be as small as 1000th of a grain and which may produce a reaction in certain cases. In ordinary surgical tuberculosis the dose may be much greater because there is not the same liability to toxæmia. If this is true of a comparatively harmless preparations such as calcium it may be much more so of a drug such as "sanocrysin."—I am, Sir, yours faithfully,

EDWARD E. PREST.

Ayrshire Sanatorium, Glenafton, New Cumnock,
April 18th, 1925.

SCARLATINIFORM RASHES IN INFLUENZA.

To the Editor of THE LANCET.

SIR,—The difficulty which besets the diagnosis of scarlet fever appears to me to increase year by year. To the public, scarlet fever is still, and perhaps rightly so, a bogey—they associate it with a long period of isolation, strict quarantine, acute ear disease, perhaps followed by permanent deafness and other serious complications. For this reason the diagnosis of scarlet fever by a general practitioner is made with considerable anxiety unless it is an absolutely typical case. If the practitioner happens to be associated with a boarding school his anxiety about the diagnosis is probably greater, because when it becomes known that a case of scarlet fever has arisen at a school, it may do that school considerable damage, and cause great worry to the staff and also perhaps more so to the parents of the scholars.

The difficulty in diagnosis has recently been brought home to me by four cases, boys at a boarding school, whom I have recently had under my care. These cases arose during an epidemic of influenza (90 cases out of 120 boys). Three of them developed a scarlatiniform rash, simultaneously, with an increased rise in temperature, five or six days after they had been taken ill with the influenza. The rash appeared on the trunk only, the influenza was associated with sore-throat and catarrhal symptoms, so it was difficult to say if there was any increased redness of the pharynx. The rash disappeared in three days, and there were no complications. The medical officer of health who saw the cases with me preferred to express no definite opinion, but advised me to isolate the cases and wait and see what happened. At the end of 18 days, no complications having arisen and no desquamation of any sort having appeared, I thought it safe to let the boys out of isolation. One of them who went home promptly started to desquamate; the other two have had no signs of desquamation. The other case during the same epidemic developed a scarlatiniform rash, which lasted two days; he had an increase in the soreness of his throat, and developed a quinsy. This case was much less like scarlet fever than the others, yet he eventually developed typical desquamation of the hands and feet. I have recently seen it stated that the rash of scarlet fever has to be diagnosed from a rash due to influenza. Were the rashes I have mentioned scarlet fever rash or due to influenza?

I should like to know if other medical men have met with any similar cases during the present epidemic of influenza. The recording of the cases, I am sure, would be of value in the differential diagnosis between scarlet fever and influenza.

I am, Sir, yours faithfully,

CHARLES BIRCH.

Whitchurch, near Reading, April 17th, 1925.

NURSING HOMES (REGISTRATION) BILL.

To the Editor of THE LANCET.

SIR,—May one use your columns to draw the attention of the profession—more particularly consultants and those who receive one or more patients into their private houses—to this Bill, which has had its first reading? It is backed by the College of Nursing and Lieut.-Colonel Fremantle, M.P. (late M.O.H.), amongst others; and they are now urging that it should be adopted as a Government measure. In its present form it would extend into the private homes of doctors the inquisitorial supervision and disciplinary regulations of the Ministry of Health, with consequential fines and penalties, so well known to insurance practitioners in their domiciliary practice. It is another instance of proposed legislation by regulations.

The definition of a nursing home is given as "any premises . . . for the reception of . . . persons suffering from any sickness, injury or infirmity for the purpose of the provision of such persons with . . . food either with or without medical . . . and where any payment . . . is made." This definition includes, and I have been informed is intended to include, doctors who receive patients of any kind. Patients who are placed, or place themselves, under the care of a doctor desiring to be associated in the home life are readily divided into four groups—namely, certified, border line, drug addicts, and those suffering from chronic forms of illness more peculiarly affecting the aged. Every doctor who receives any such patient would be subjected to the conditions outlined in this Bill if it passes in its present form.

These conditions include determination by the Minister of Health: (*a*) whether the doctor is a suitable person to receive one or more patients; (*b*) whether the nurses and servants he has engaged are suitable; (*c*) whether the lighting, heating, ventilation, and sanitary state of the accommodation for the patients, nurses, and servants are satisfactory; (*d*) whether the home is properly equipped for patients; (*e*) the exact prominent position in the house where a copy of the regulations shall be displayed for all to read; as also the exact position inside and outside the house where a notice shall be placed that the house is a "registered nursing home." Also the medical officer of health or an appointed State registered nurse, at reasonable hours, can call to inspect the whole house and staff, the entries and records in the registers of patients, of transfers and discharges, of deaths, of clinical records, of dispensing done, of casualties, as also the reports required to be made from time to time.

Now the primary object of receiving these patients into a doctor's house is to provide for them the atmosphere of a home, whilst insuring that care and supervision by a doctor so necessary if any *improvement in their health is to be hoped for.* If this Bill goes through in its present form then consultants and private practitioners will find themselves deprived of just those non-institutionally conducted homes which their patients require; for there can be no question that private practitioners who at present receive these patients will refuse absolutely to place their homes, themselves, and their families in a position *to be dragooned by a State organisation. That* result would be against the interests of the public, the patients concerned, the relatives, and the medical *profession generally. It has been said—and by* doctors—that if the notice board outside the house is done away with there is nothing to object to! *This shows lack of vision.* Also that doctors must not expect to be treated differently from any lay person who may decide to open a home! Surely the profession is sufficiently dominated at the present time by the State. Will it tamely allow this further proposal?

May I urge all interested to at once read the Bill, and then to communicate their views to their Member of Parliament, the British Medical Association, as well as to any others whose influence could be brought to bear in order that the members of the medical profession who receive private patients be excluded from the operations of this Bill? Unless this condition is secured the Bill should be opposed with all the power still left *to us.* There is no time to be lost.

I am, Sir, yours faithfully,

Hove, April 18th, 1925. E. ROWLAND FOTHERGILL.

HOW TO BLOW THE NOSE.

To the Editor of THE LANCET.

SIR,—With reference to Dr. A. D. Sharp's letter on this subject in your issue of *to-day's* date, I would like to say that it is important that the child (or adult) should be taught to blow *into* the handkerchief and not against it, as is so usual, *also to grip* the upper or bony part of the nose and not the *cartilaginous, so avoiding* any artificial increase of intranasal pressure. This advice is especially necessary after nasal douching. Further, when there is perforation *of the tympanic membrane* the raising of pressure is especially to be avoided, and where the Eustachian tube is freely patent the patient should be warned to *prevent the rush of air and* mucus into the middle ear by blocking the external auditory meatus with the finger or thumb of the unoccupied hand.

Parents should be advised to see that children *use their noses* for respiration at all times, especially after operations for the relief of nasal obstruction, so that the organ may become developed for the purpose *for which it is intended.*

I am, Sir, yours faithfully,

London, April 18th, 1925. C. HAMBLEN THOMAS.

UNIVERSITY OF LONDON SENATORIAL ELECTION: TWENTIETH CENTURY SOCIETY OF LONDON GRADUATES.

To the Editor of THE LANCET.

SIR,—My attention has been directed to a paragraph in the issue of THE LANCET for April 18th which implies that the Twentieth Century Society of London Graduates stands for the adoption of the Haldane Report. This is not correct.

The principles underlying the evidence which will shortly be submitted, on behalf of the Society, to the Departmental Committee on University Education in London are as follows: (1) Government of the University by a representative Senate as at present, and not by a Senate mainly nominated as suggested in the report of Lord Haldane's Commission. (2) Adequate representation on the Senate of teachers, graduates, principal colleges, and contributing authorit.es. (3) A *large measure of college autonomy in* finance and administration. (4) Maintenance of the external degree. (5) Recognition of the position of teaching institutions outside London preparing for the external degree and systematic consultation of them with reference to curricula and examinations.

In fairness to Mr. T. B. Layton, the candidate who is being supported by the Society at the forthcoming *Senatorial election for a* Convocation representative of the Faculty of Medicine, may I ask you to insert this letter.—I am, Sir, yours faithfully,

G. F. TROUP HORNE,
Hon. General Secretary.

Malet-street, W.C., April 21st, 1925.

Public Health Services.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

Borough of Hornsey.

THE first annual report for the *year 1924 to reach* us is that in which Dr. A. T. Nankivell deals for the last time with the health of Hornsey before taking up his new duties at Plymouth.

Most of the health statistics of Hornsey for 1924 are favourable. The population is estimated at 88,001. The birth-rate was low, 15·0, attributed by Dr. Nankivell to late marriages, to birth control, and to the practice of various methods for procuring *abortion. The dozen instances of the latter brought* to his knowledge only give a slight indication of the *prevalence of this practice.* The death-rate from all causes was 10·4, and a lower death-rate is hardly to be expected in this district, owing to the excess *of elderly persons in the population.* The infant mortality-rate was by far the lowest on record—namely, 36 per 1000 births. The lowness of this rate draws attention to the *fact that the* neonatal rate shows no tendency to decrease. No less than 34 of the 48 infant deaths occurred during the first four weeks, and an interesting chart given by Dr. Nankivell shows that the neonatal mortality-rate has remained constant during the last 40 years, whilst the rest of the infant mortality-rate has declined in a remarkable manner. In view of this, Dr. Nankivell *urges the importance of skilled* medical advice during pregnancy. The total tuberculosis-rate for the borough was 0·67, while the cancer death-rate gave the high figure of 1·7. *There were* two maternal deaths from childbirth, which is equivalent to a rate of 1·5 per 1000 births. The death-rate from respiratory diseases and influenza was 2·0. Heart disease and nephritis caused nearly as many deaths as cancer, and Dr. Nankivell suggests that as diseases of the arteries, heart, and kidneys yield *very* well to care and early treatment, it would be well if the *custom of a periodical* overhauling, as is usual in the case of our teeth, were applied to these organs.

Dealing with the milk-supply, Dr. Nankivell draws attention to several *objectionable* practices. Milk which has been round the streets on a barrow may be reheated and placed in cold storage and subsequently *sold as fresh milk.* Some pasteurised milk may be sold as "fresh" milk or "new" milk or "milk," and the obligations of the seller of pasteurised milk thus avoided. One example is quoted *of a milkman* who has a pasteurising plant but does not use it *invariably, and sells his* produce as "milk." Dr. Nankivell points out that a milkman may be licensed to sell pasteurised milk, that he may have a suitable pasteurising plant, and that he may put the milk through the plant, lay it down in cold storage, and retail it at his convenience "under the engaging title of new or fresh milk." A most objectionable practice mentioned is that of the milkman who fills up from a churn on his barrow dirty bottles taken from doorsteps and forthwith redistributes them to his customers.

In connexion with the maternity and child welfare scheme, three massage clinics have been arranged by the voluntary committee and are doing useful work. Dr. Nankivell hopes that the provision of a convalescent home for mothers and babies will be one of the next departures. Hornsey being mainly a residential town of good-class houses, there are no slum areas, but there is a good deal of overcrowding of several families under one roof. This overcrowding is economic in origin, and will not be remedied by the council's new houses, although the latter are eagerly sought by those who can pay a reasonable rent for a good building. In his school report Dr. Nankivell says it is difficult to see the results of a slowly operating system, but that the older teachers are unanimous in appreciating the difference between the school child of to-day and the child of 15 years ago. In Hornsey there is not much malnutrition caused by lack of food, but there is malnutrition caused by the wrong choice of food. "Bread and jam, cakes and sweets too often form the bulk of the diet of the growing child; the entire absence of fresh foods from many dietaries is deplorable. Even if a man has an allotment and grows his own green vegetables, his family does not seem to eat lettuces, mustard and cress, or cabbages; tinned milk is often used instead of fresh milk, and canned fruits and fish instead of the fresh articles." "The remedy," says Dr. Nankivell, "lies in the education of the parents and especially of the children themselves; and girls at cooking classes should learn not only how to cook but also what to cook."

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED APRIL 11TH, 1925.

Notifications.—The following cases of infectious disease were notified during the week, namely:—Small-pox, 119; scarlet fever, 1568; diphtheria, 769; enteric fever, 35; pneumonia, 1318; puerperal fever, 51; cerebro-spinal fever, 10; acute polio-encephalitis, 1; encephalitis lethargica, 48; continued fever, 1; dysentery, 10; ophthalmia neonatorum, 98. There were no cases of cholera, plague, or typhus fever notified during the week. The number of small-pox cases showed a decrease of 3 from the number for the preceding week. Twenty-six cases were notified from Derbyshire (Derby C.B., 15); 19 from Northamptonshire (Kettering, 15); 20 from Northumberland; 23 from Notts (Mansfield Woodhouse, 10); and 11 from Yorks, North Riding (Middlesbrough C.B., 10).

Deaths.—In the aggregate of great towns, including London, there were 1 deaths from enteric fever, 143 from measles, 17 from scarlet fever, 125 from whooping-cough, 36 from diphtheria, and 221 from influenza, as compared with 242, 281, 301, and 283 in the four preceding weeks. In London itself the deaths from influenza numbered 31, from whooping-cough 33, and from diphtheria 8.

THE LATE DR. E. C. PRICHARD.—Evan Christopher Prichard, M.D. Edin., of Horse Fair, Banbury, died on April 8th at the age of 17 following an operation. He was a son of the late R. K. Prichard, of Bridgend, and received his medical education at Edinburgh University, where he qualified M.B., Ch.B. in 1902, obtaining the M.D. four years later. After holding the usual hospital appointments, he took up practice in Banbury, where at the time of his death he was senior honorary medical officer to the Horton Infirmary. A colleague writes of him: "Prichard was one of those men to whom his patients' illnesses and troubles were his own anxiety throughout. He engaged in all branches of practice, but it was as a surgeon that he did his best work. He possessed that essential quality of a good surgeon, the ability to do the right thing in an emergency. In his dealings with his colleagues his most lovable characteristic was his boyishness, his open heart, his cheerful and direct speech. It is with feelings of great regret that his colleagues in this district look upon his untimely death when much of his life's work lay in front of him."

Obituary.

SIR RICKMAN JOHN GODLEE, BART., K.C.V.O., M.B., M.S. LOND., F.R.C.S. ENG.,

CONSULTING SURGEON, UNIVERSITY COLLEGE AND BROMPTON HOSPITALS: LATE PRESIDENT OF THE ROYAL COLLEGE OF SURGEONS OF ENGLAND.

WE deeply regret to announce the death of Sir Rickman Godlee, which occurred at his house, Coombe End, near Whitchurch, on Monday last, after an illness of only a few hours.

Rickman John Godlee was born of an old Quaker family, the son of a barrister whose wife was sister of Lord Lister, and Godlee's relationship to the discoverer of antiseptic surgery had a paramount influence upon his career. He was born at Upton, Essex, on Feb. 15th, 1849, and was brought up in the usual environment of a prosperous Quaker family. He received his early education at a school at Tottenham mainly supported by the Friends, where natural history formed a definite and even a large part of the curriculum, so that from his youth he was a field botanist and ornithologist, and able to draw lessons from the biology of the countryside. He graduated at the University of London at an early age, and entered University College Hospital as a medical student, where he was remarked as an able anatomist. He qualified as M.R.C.S. Eng. in 1872 and filled the usual house appointments at the hospital, while he studied for the London degrees in medicine and surgery, being awarded the gold medal for surgery. He then went to Edinburgh, where Lister's work was proceeding and where the significance of the great discoveries had been more fully recognised than it was in London. Here he worked with Lister as an assistant and acquired full knowledge of the theory and technique of antiseptic surgery as practised in those early days, and on returning to London became surgical registrar at University College Hospital. In 1876 he took the Fellowship of the Royal College of Surgeons of England, and was elected assistant surgeon to Charing Cross Hospital and the Queen's Hospital for Children. In the following year a vacancy occurred on the staff of University College Hospital, and he was elected assistant surgeon at the hospital, becoming, as was the usual practice in the London schools of medicine at the time, demonstrator of anatomy in the medical school. The staff on the surgical side of the hospital was strong, including Erichsen, Henry Thompson, John Marshall, Berkeley Hill, Christopher Heath, and Marcus Beck, the last being Godlee's cousin, immediate senior and the colleague with whom much of his work was done. As a demonstrator of anatomy Godlee, in addition to his wide knowledge, had the great advantage of being a brilliant draughtsman, who was responsible for many of the illustrations in one of the issues of Quain's Anatomy.

Godlee's career as a hospital surgeon and consultant was quietly successful throughout. He was known to be the constant assistant to Lister in his operative practice in London, where the great surgeon was now living and attached to King's College Hospital; his colleagues and his students learned from the first to appreciate his wisdom and his skill. His name came prominently to the front in connexion with a case of excision of a tumour from the brain. This case created keen interest some 40 years ago and a full account of it will be found in our columns.[1] The patient, a man of 25, came to Hughes Bennett, a leading neurologist of the day, complaining of paralysis of the left arm, complicated with a vague story of injury on the same side of his head. Symptoms of cerebral irritation had occurred for more than two years, and finally there were seizures with loss of consciousness about once a month. When the patient came under observation he was being attacked with spasmodic twitchings of the left hand and arm, which alternated with twitchings of the face; he had paralysis of the upper limb, but general health and intelligence were good, pains in the head being the main thing of which he complained. Hughes Bennett from all the symptoms diagnosed a tumour in the cortical substance in the neighbourhood of the upper third of the fissure of Rolando, and Godlee was selected to cut down at that spot with a view to any necessary operation. The risks of an operation which was an innovation were explained to the patient who cheerfully submitted with the hope of relief from intolerable pain. Godlee removed a triangular piece of bone over the indicated area, found the ascending frontal convolution distended, made an incision some quarter of an inch below the surface, and discovered a glioma about the size of a walnut, which he enucleated. For a time the operation appeared to be entirely successful, but subsequently the patient died of secondary surgical complications. The account of the case in THE LANCET attracted much public attention, and led to a discussion in the *Times* on the subject of vivisection, the suggestion apparently being that a human patient had been made the subject of a surgical experiment. Accordingly the whole case was discussed at the Royal Medical and Chirurgical Society, when Hughes Bennett described the operation, its termination, and the post-mortem findings, discussing the physiological and pathological points of interest. Sir David Ferrier, Hughlings Jackson, William MacEwen, and Victor Horsley took part in a debate which abundantly proved that, in spite of its unfortunate issue, the case was one of the highest importance, as it substantiated the well-known researches of Hughlings Jackson and Ferrier, and established the possibility of surgical relief for cerebral growths.

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[1] THE LANCET, 1884, ii., 1090.

SIR RICKMAN GODLEE.

[*Photograph by Elliott and Fry, Ltd.*

In 1884 Godlee was elected surgeon to the Brompton Hospital, with which institution he was connected actively for over 20 years, and where he did some of his best known work. Its results are modestly but accurately represented in the well-known volume on "Diseases of the Lungs" written by himself and Sir James Kingston Fowler. This work was immediately recognised to constitute an important addition to the literature of scientific and practical medicine, while it brought home to the profession in a striking manner what an extension of the surgical province had been provided by the development of antiseptic surgery and of bacteriology. The work was one of real coöperation between the authors, the contributions of each being studied by the other; it was the outcome of long joint experience at the Brompton Hospital, and the valuable aid of other members of the staff, notably of Dr. Percy Kidd and Dr. A. F. Voelcker, was received throughout. The orderly arrangement of the treatise, the precise statements where possible, and the omission of dogmatic assertions, as well as the wide range of material, marked the book off for immediate success, while Godlee's chapters on the surgery of the lung and pleura became an inspiration to operators, all the more forcible because the clinical teaching was accompanied by an admirable chapter on the anatomy of the parts concerned.

Godlee's long and distinguished connexion with the Royal College of Surgeons of England began by election to the Council in 1897, but he had previously examined for the College, ultimately becoming chairman of the Court of Examiners. In 1911 he was elected President in succession to Sir Henry Butlin, who died during his term of office, and he presided over the College for the three years preceding the war, discharging the duties with the punctilious and quiet completeness that were anticipated by all who knew him. He delivered the Bradshaw Lecture of the College in 1907, taking as his subject the surgery of tuberculosis of the genito-urinary organs, and was Hunterian orator in 1913. In 1912 he was created a baronet, and was made a K.C.V.O. in 1914 on the termination of his office. He was surgeon to the Household under Queen Victoria, and later Surgeon-in-Ordinary to King Edward VII., and to King George V. One of his last acts in office at the College was to go to America to deliver an address on the occasion of the foundation of the American College of Surgeons, of which he became an original Fellow. In this address he briefly reviewed the history of the College, its rise from a city company, its evolution into a Royal College, its relations with the Royal College of Physicians, and its double function as a great examining body and the trustee of the Hunter Museum. There is no doubt that the clearness of the address, and the spirit of brotherhood displayed throughout in its expressions, formed a valuable link on the eve of war between the medical activities of the two countries.

When the war broke out Godlee was too senior to serve in any consultant capacity abroad, but in many ways, and always unostentatiously, he worked to maintain our medical efficiency in all spheres. He was a punctilious member of the Central Medical War Committee, and in the early days of that Committee his shrewd and tolerant advice as to the methods by which our armies abroad could be adequately supplied with medical officers, without over-depletion of the medical service at home, was on all occasions accepted. He was also chairman of the Belgian Doctors' and Pharmacists' Relief Fund, and in that capacity served continually on a Committee which sat monthly for some two years in the offices of THE LANCET. The Editor of THE LANCET was secretary of the movement, and Dr. Harold Des Vœux was treasurer, and the subscriptions, as they were contributed in open-handed manner by the medical profession, were immediately devoted to relieve distress in suitable cases. The responsibility for the individual grants was taken by the three officers of the fund, and every day for many weeks Belgian refugees belonging to one or other of the professions were interviewed and grants were made which, during 1915, formed the only source of support for many of the miserable families. Godlee was instrumental in bringing to the notice of the General Medical Council the advantage of sanctioning the practice of allowing Belgian practitioners to qualify in England, when an appreciable number were placed in a position of earning their own living, while others were supplied with money and facilities, in order that they might join their own fighting forces on the Western front. By the beginning of 1916 it became possible to relieve the medical men and pharmacists in Belgium itself, and for some months money was sent at the rate of £100 and later £200 a week to Brussels through the agency of the International Commission for Relief. Over £25,000 were disbursed in this manner, and the details of every grant and the destination of every cheque were scrutinised by Godlee, who was also a generous contributor in money.

After the war Godlee gradually passed more and more of his time at Coombe End Farm, a beautiful place, lying on the summit of Whitchurch Hill, above the Thames. Here he devoted his time, when official business did not bring him to London, to the farming of his property and the writing of the biography of Lister. The life of Lister appeared in 1917, and was written in the spirit dictated by its subject who had said "a scientist's public life lies in the work that is his." That is to say, the main part of the biography is a history of antiseptic surgery written by one who was intimately associated with Lister in his experimental work and its developments, and who for many years, in association with Sir Watson Cheyne, assisted him in his operative practice. We therefore find included in the book a graphic sketch of Victorian medicine in Edinburgh, Glasgow, and London, as well as on the continent, showing how the revolutionary doctrines were received, and the spirit in which they were interpreted. The biography met with the success which it deserved, went through more than one edition in this country, and is, we believe, in course of translation into German.

In private life this man of many posts and many honours was conspicuously simple, and save to his friends, a little austere. He was business-like and punctual, and got through much work, public and private, without haste or fuss. He was essentially accurate and inclined to be severe upon anything that savoured of pretence or pose. But he was the best of friends with those whose sincerity he recognised, and, whether in casual meeting or on more intimate occasions, could be an interesting and an amusing talker over a great choice of subjects. He was a linguist who had travelled considerably, he had a close acquaintance with many phases of art, and was himself a good water-colour painter. He had an unusual knowledge of botany and ornithology; he was a practical farmer and an assiduous gardener; and along the whole range of his accomplishments he was fully read and minutely documented. Latterly he lived almost entirely at his country house, where he died; and though his busy professional career had kept him all his life much in London, his joy in farming was of the sort that could only come from a real familiarity with the countryside. He loved the working of Nature.

Sir Rickman Godlee married in 1891 Juliet Mary, daughter of Frederic Seebohm, Lit.D., of the Hermitage, Hitchin, who survives him, and to whom the sympathies of all the medical profession will be extended in her loss. There were no children of the marriage.

The funeral took place on Thursday last at Whitchurch Hill, Oxon.

ROBERT JAMES McLEAN BUCHANAN,
M.D. Manch. and Liverp., F.R.C.P. Lond.

We regret to announce the death, on April 19th from pneumonia, of Dr. Robert J. M. Buchanan, professor of forensic medicine and toxicology at the University of Liverpool. Perhaps the career of Dr. Buchanan was in some respects unique, for he was justly proud of the fact that before he began the study of medicine he helped to build, as an apprentice joiner, the Liverpool Royal Infirmary, in which he later served as an honorary physician. Severing his apprenticeship with joinery as a young man, he began a distinguished career as a medical student at University College, Liverpool, gaining many class medals and later a Holt Fellowship in Physiology and Pathology, in which subjects he had acted as demonstrator. In 1888 he graduated M.B., Ch.B. with honours in systematic and clinical medicine, and obtained the M.R.C.S. Eng. In the same year he won the Derby Exhibition at Liverpool University in clinical medicine and surgery, and in 1889 he was awarded a gold medal by the Victoria University of Manchester for his M.D. thesis. In 1897 he became a Member of the Royal College of Physicians of London and a Fellow in 1908, having been awarded four years previously, in 1904, the M.D. Liverpool. Early in his career he became associated with the Department of Forensic Medicine and Toxicology at his University, and held therein successive appointments, culminating in the professorship, from which he retired at the end of 1924. His clinical experience as a physician was gained through his services to several Liverpool hospitals: first to the Stanley Hospital, then to the Hospital for Consumption and Diseases of the Chest, and finally as honorary physician to the Royal Infirmary, to the consultant staff of which he was appointed in June of last year. During the war he acted as captain in the R.A.M.C.(T.) and was one of the physicians of the First Western General Hospital. He was an active member of the Medico-Legal Society and the Liverpool Medical Institution. Some years ago the Southport Medical Society elected him as their president.

Dr. Buchanan's chief contributions to medical literature include a monograph on "Rabies and Hydrophobia," and the reissue of "Husband's Forensic Medicine," minus the public health section, as "A Text-book of Forensic Medicine and Toxicology," brought thoroughly up to date. In 1909 he published "The Blood in Health and Disease," a well-known and excellently illustrated manual. He was the author of several articles in the Practical Encyclopædia of Medicine and Surgery, among them "Diseases of the Pleura and Mediastinum" and "Diseases of the Spleen and Thymus." His judgment as a physician was highly valued by his colleagues, who recognised his worth as a sound, experienced, and reliable consultant. His book on diseases of the blood showed him an expert microscopist and an excellent draughtsman, as well as an apt microphotographer. He was a regular exhibitor of his own paintings and water-colour sketches at the autumn and other exhibitions in Liverpool—sketches more especially of the picturesque features of North Wales. Moreover, he was a keen disciple of Izaak Walton and had an intimate knowledge of the best trout streams around Liverpool. A man of singular versatility and abounding energy, he was a lover of music and a raconteur of the first order.

A colleague writes of him: "In Dr. Buchanan we have lost one of those all too rare ornaments of the profession who, in spite of the labours of the day and the demands of ever-advancing knowledge, are able, by their literary or artistic gifts, to lift the mind above common things and add to the sum of human happiness."

He lost his elder son, who had just begun to study medicine, about five years ago, a blow which left a deep impress on Dr. Buchanan's health. The sorrow of his widow and younger son will be shared by many thousands of his patients in and around Liverpool, who profited by his skill and ever-ready kindness in the wards and in private practice.

SAMUEL REGINALD ORME DUDFIELD,
O.B.E., M.B., D.P.H. Camb., M.R.C.S. Eng.

Dr. S. R. O. Dudfield, medical officer of health for Paddington, died on Sunday at the Hospital of St. John and St. Elizabeth, St. John's Wood, from appendicitis, at the age of 61. He was the son of Dr. T. Orme Dudfield, a former medical officer of health for Kensington. He went up to Trinity College, Cambridge, where he took his Natural Science

Tripos in 1882. He then studied medicine at St. Bartholomew's Hospital, London, and in 1885 qualified as L.R.C.P. Lond. and M.R.C.S. Eng., graduating two years later as M.B., C.M. Camb., and taking his D.P.H. in the following year. Dr. Dudfield's first public health appointments were as assistant medical officer to the Homerton Fever Hospital and medical officer of health for Eastbourne. For a period of over 30 years he acted as medical officer of health for Paddington, for a large part of which time he was editor of *Public Health*, the official publication of the Society of Medical Officers of Health. Dr. Dudfield had a mathematical mind which turned naturally to the statistical solution of public health problems. He was a severe critic of slipshod method and regarded the lack of exact definition of puerperal fever as invalidating the mortality returns from this disease, while championing the right of the practitioner often to be in honest doubt in the diagnosis of exanthemata. He took an active part in the proceedings of the Royal Statistical Society, of which he was Guy Medallist and to which he held the position of honorary foreign secretary, while he was a titular member of the International Statistical Institute. His contributions to the *Journal of the Statistical Society* include such articles as On the Critical Examination of Methods of Recording and Publishing Statistical Data bearing on Public Health: Suggestions for the Improvements of Such Methods (1905); Some Unconsidered Factors Affecting the Birth-rate (1908); Still-births and Infantile Mortality (1912); Life Tables for Infants: Methods of Construction (1911). Dr. Dudfield was also at one time President of the Harveian Society and honorary secretary of the Epidemiological Section of the Royal Society of Medicine. Under the old Volunteer regulations he held the rank of surgeon-lieutenant to the 26th Middlesex Cyclists' Corps of the Rifle Volunteers, and during the war he was captain in the R.A.M.C. (T.), attached to the 1st City of London Sanitary Company. For his services in the field he was mentioned in despatches and received the Order of the British Empire. His death is a distinct loss to the public health service.

THE LEGAL RESPONSIBILITY OF THE SURGEON.

A meeting of the Medico-Legal Society took place in the rooms of the Medical Society of London on April 21st, Lord Justice Atkin, the President, occupying the chair.

Lord Riddell read a paper introducing a discussion on the legal responsibility of the surgeon. He said he had no desire to lay down legal or medical opinions, but to ventilate the matter and ask for a reconsideration of problems which had arisen in these changed times of aspiration and needs, or imagined needs. The rules laid down in regard to criminal responsibility could be shortly epitomised; everyone, whether a licensed practitioner or not, was protected from criminal responsibility for performing, with reasonable care and skill, any lawful surgical operation on a person with his consent and for his benefit, providing he had regard to the patient's state at the time and all the circumstances of the case. Consent could be given by guardians or relatives. That consent, however, must not be exceeded. Neither lawyers nor doctors guaranteed cures; they only contracted to do their best, and this meant that a higher degree of skill was to be expected from the specialist than in the case of the ordinary practitioner. "Lawful" and "for his benefit" were subject to different interpretations. Ethical questions arose when considering the degree of danger for what would be otherwise a criminal offence. If the mortality from a certain operation was 97 per cent., was the surgeon justified in operating, after explaining the circumstances to the patient? Should it be done to please the patient? Lord Riddell did not think rules could be laid down in this respect.

Sterilisation.

His main purpose was to draw attention to the situation in regard to sterilisation which had arisen out of the modern teaching in eugenics and the recent discoveries in medical science. Under what circumstances was it justifiable to render men or women sterile? The practitioner had a duty to the State as well as to the patient, and this view had always been insisted on by the State, both in the matter of sterilisation and maiming. No surgeon was bound to perform an operation for sterilisation, but could he do it by agreement with the patient or her relatives? And, if so, under what circumstances? It was frequently thought that, apart from legal abortion, a surgeon and patient could agree to an operation, and if death resulted the surgeon was relieved of responsibility. That, however, was wrong. A man and a woman were not held to be masters of their own bodies, to dispose of as they wished, and the prohibition of self-maiming arose out of the same principle. Baron Bailey expressed the principle by saying that a prosecution in such cases was for the public benefit, and the willingness of the patient could not take away the offence against the public. In early days castration seemed to have been a common offence by injured husbands and angry women, but afterwards it was treated as a felony and was punished by death, the original object of the punishment being that the act took away the person's courage. The punishment had become modified, but it was still an offence; castration, except for pathological reasons, was illegal, and the surgeon was then guilty of unlawfully wounding, whether it was done with consent or not. Vasectomy for the purpose of preventing offspring came into the same category.

Sterilisation of women was a more frequent operation than castration, and the questions involved were of wide and growing importance. The law was not so clear on the sterilisation of women as it was in regard to castration in men. In women the removal, with or without the consent of the person, of uterus, ovaries, or Fallopian tubes was illegal, and was held to be against public policy. If pregnancies in a particular woman had been shown to be both difficult and dangerous, was the surgeon justified in sterilising her to save her life? And was one rule to be applied to married women and another to unmarried? If a woman had five children in five years and was much reduced in health in consequence, did that justify sterilisation? His view was that each case must be treated on its individual merits. The question was a very large one, especially in view of the fact that in this kingdom a child was being born every two minutes, and birth control had changed the habits of 350 million people in Europe and America, where, in a general way, the birth-rate was falling, and this quiet revolution might spread to the East. The matter should not be left entirely in the hands of the professors of gynæcology; the public were entitled to know what were the opinions held by the medical profession on the subject. If a wife gave consent for her sterilisation and the husband's consent had not been asked, he might have a cause of action for being deprived of the possibility of offspring, but he would have no cause for action if the operation were rendered necessary by a definite pathological condition. Mentally defective women were prolific in the matter of children; was sterilisation a legal procedure in such cases? He considered that it was not, unless the operation were for the medical welfare of the patient. It was illegal when performed solely to prevent her from having children.

In conclusion, Lord Riddell raised the question of cosmetic operations such as those associated with beauty parlours, the operations for the dispersal of the double chins of middle-aged women, and so forth. If sepsis and death ensued, did a charge of manslaughter lie against the practitioner?

Discussion.

Sir William Willcox said the medical man did not do an operation because the patient wanted it; if that course were pursued, it would be bad for both patient and the medical man. There must be some real medical benefit aimed at by the operation. He agreed that the operation of vasectomy in order to prevent the bringing of children into the world was illegal, and the use of X rays for such purposes came into the same category. He was strongly against the sterilisation of mental defectives, especially as it was often difficult to say who were mentally defective.

Sir Charters Symonds said the public had a right to express an opinion on the subject of the sterilisation of mentally defective persons. While such people were kept under supervision in institutions they were industrious and harmless, but if they improved and were allowed out, the girls became prostitutes and the men trended towards crime. His own view was that the time had come when these people should be sterilised.

Prof. Louise McIlroy quoted the case of a working woman with an ovarian tumour which caused her great pain, and her husband, in consequence of a quarrel they had had, would not consent to the removal of the tumour. In consequence she had to leave the hospital again unrelieved. That raised the question whether, the woman having consented, the operation should be done. She, the speaker, did not think that problem would ever be cleared up. In some cases, in which the doing of an operation was a danger to the patient's life, it was necessary to hedge somewhat on the legal aspect, and decide on the general circumstances of the case. The possible death of the patient should not affect the question of the operation itself. Now that the dosage of X rays was a matter of more exactitude, sterilisation could be produced for a year, and at the end of that time renewed if necessary. But in regard to many of these cases of difficult decision she could not avoid the feeling that she was walking on a volcano all the time. She did not know whether, in any action brought in respect of such cases, the surgeon would have the support of the legal profession, but the heads of the surgical profession would probably back up the procedure. She felt very strongly that surgeons had no right to sterilise mental defectives; she regarded that as an assault. These people were better in institutions; if allowed to go out, they interfered with the morals of the community. Sterilisation because of syphilis should never be done, and that was not so necessary now as the disease was much more curable.

Dr. Douglas Cowburn said the surgeon was actuated by the one single motive, the good of the patient. He was not liable for an error of judgment, even though such error might cause the death of the patient, unless it was so gross as to be inconsistent with reasonable skill, care, and diligence. He proceeded to discuss the relative responsibility of the surgeon and the anæsthetist.

"VOYAGE D'ETUDES MÉDICALES."—The nineteenth Voyage d'Etudes Médicales to the health resorts of France (organised solely for the medical profession) will take place during the first part of September under the scientific direction of Profs. Carnot and Rathery and will be devoted to the resorts of the north and east. The party will assemble at Berck-sur-Mer and will first visit Paris-Plage, Lille, and Saint-Amand, and thence proceed to Belgium in order to visit Brussels, Spa, Luxembourg, and Mondorf. Returning to France, via Niederbronn and Morsbronn, the nineteenth V.E.M. will visit Strasbourg, proceeding from there by motor-car to Schirmeck, le Hohwald, Sainte-Odile, Chatenois, and Ribeauvillé, then Colmar, Soulzmatt, Soulzbach, Munster, les Trois Epis, le Linge, le Col de la Schlucht, and Gerardmer. Crossing the Vosges again it will then follow the road of the Crêtes and visit Bussang, Luxeuil, Plombières, Bains-les-Bains, Bourbonne, Martigny, Contrexéville, and Vittel. First-class accommodation is arranged throughout the journey and at the hotels. Further particulars may be obtained from Madame Juppé-Blaise, delegate of the French Spas, Office Français du Tourisme, 56, Haymarket, London, S.W. 1.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Lt.-Comdrs. to be Surg. Cmdrs.: F. C. Wright, H. E. Y. White, D. P. H. Pearson, I. S. Gabe, and A. J. Tozer.

Surg. Capt. E. T. Meagher is placed on the Retd. List with rank of Surg. Rear-Admiral.

ROYAL ARMY MEDICAL CORPS.

ARMY DENTAL CORPS.

Lt. T. D. Corke to be Capt.

TERRITORIAL ARMY.

Col. F. Kelly, having attained the age limit, is retired and retains his rank.

Lt.-Col. R. M. Vick resigns his commn. and retains his rank with permission to wear the prescribed uniform.

Majs. (Prov.) J. S. Hudson and A. C. Court are confirmed in their rank.

Capts. A. Morris and R. O. Ward to be Majs. (Prov.).

Lt. G. V. Davies to be Capt.

INDIA AND THE INDIAN MEDICAL SERVICE.

Maj. W. O. Walker, officiating civil surgeon, has been transferred from Jalpaiguri to Darjeeling, vice Lt.-Col. Proctor, transferred, or until further orders. Military Assist. Surg. S. J. V. Fox, civil surgeon, has been transferred from Jessore to Jalpaiguri, vice Maj. W. O. Walker, transferred, or until further orders. Military Assist. Surg. H. A. Young has been appointed to act as a civil surgeon and has been posted to Rajshahi, vice Maj. F. G. Gow, transferred, or until further orders. Lt.-Col. D. McCay, professor of clinical medicine, Medical College, Calcutta, and second physician to the College Hospitals, has been allowed leave for one year and seven months. Maj. J. D. Sandes, officiating civil surgeon, Hooghly, to act as professor of clinical medicine, Medical College, Calcutta, and second physician to the College Hospitals, vice Lt.-Col. D. McCay, granted leave, or until further orders. Maj. C. A. Godson, police surgeon, Calcutta, has been appointed to be civil surgeon, Hooghly, vice Maj. J. D. Sandes, transferred, or until further orders. The services of Capt. G. H. Fraser have been placed temporarily at the disposal of the Government of Bihar and Orissa for employment as officiating superintendent, European Mental Hospital, Ranchi. The services of Capt. N. Briggs have been placed temporarily at the disposal of the Government of the Punjab for employment in the Jail Department. Capt. A. C. Craighead has been appointed temporarily to the Medical Research Department, and posted as a supernumerary officer at the Central Research Institute, Kasauli, with effect from the date he takes over charge. The services of Lt.-Col. H. G. Stiles-Webb have been placed temporarily at the disposal of the Government of the Central Provinces. Col. J. A. Black, Inspector-General of Civil Hospitals, C.P., has been granted leave for a period of eight months. Col. F. Wall and Lt.-Col. H. Emslie-Smith have retired from the service. Capt. C. H. N. Baker has been appointed officer-in-charge, Medical Store Depôt, Rangoon, in addition to his other military duties.

DEATHS IN THE SERVICES.

Brigade Surg. Lt.-Col. William Edmondson Dudley, retd., who died at his residence in Bath at the age of 86 on April 13th, was born at Templemore, Tipperary, in 1838. He received his medical education at the Royal College of Surgeons in Ireland and qualified with the licentiateship of that body and with the L.A.H. Dub. in 1862. In the following year he obtained the L.R.C.P. Edin., and was appointed assistant surgeon to the 78th Regiment. From 1868 to 1871 he was on the Army Medical Staff and was afterwards attached to the Royal Artillery. Later he was attached to the 3rd Regiment (the Buffs) in the Zulu War of 1879 and was awarded the medal and clasp. In the Afghan War of 1880–81 he served with the 78th Highlanders. He retired in 1881 with the rank of hon. brigade surgeon.

The Minto Gold Medal for Research in Tropical Medicine for 1924 has been awarded to Maj. R. N. Chopra, I.M.S., of the School of Tropical Hygiene, Calcutta. This is the first time a member of the staff of the school has been the recipient of the award.

Medical News.

UNIVERSITY OF CAMBRIDGE.—At the examination for the Diplomas in Public Health, Hygiene, and Tropical Medicine and Hygiene (New Regulations) the following candidates were successful:—

Part I.—Mohammed A. E. M. El Diwany, Andrew N. Fergus, Abdel R. Hassan, Mary K. Henegan, Charles F. Pedley, Colin H. H. Robertson, Labib Shehata, Charles J. Stocker (distinguished), William J. Vickers, Alan D. Whitelaw, and Man K. Yuo.

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH, ROYAL COLLEGE OF SURGEONS OF EDINBURGH, AND ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.—At examinations held recently, of 125 candidates entered, the following 39 passed the Final Examinations:—

Henry Goldsmith, John A. Hyde, Lim K. Htoe, James Kirkness, Soo W. Tay, John Karkness, Fraser D. Muller, Harold B. Waíner, Robert T. Johnson, Winifred G. Price, Mohammed M. El-Makkawi, Alexander B. Jayasuriya, Appu H. T. de Silva, James L. Malone, Andrew Wilson, Myles E. T. Burke, Herbert A. Dirckze, Sayed Ghaleb, Arumugam Chellappa, William A. Kemp, Sundaramuler Ramakrishnan, Moses Kopelowitz, Arthur F. Senewiratne, Joseph F. Hedley, William J. Ledgerwood, Ronald H. Mackintosh, James Houston, Douglas B. Craig, Sing K. Sie, Matthew L. Hendrie, John M. Coutts, Isaac Jools, Hapuarachige D. J. Lazarus, Mordchel Gordon, Owen L. F. Senaratne, Peter King, William M. F. Ker, Mohammad J. Quaraishi, and Arthur A. F. Shepherd.

Medicine.—Constance C. Reid, Ella D. Messenger, John J. McKenna, Constance P. H. Hunter, Ryerley C. F. Leembruggen, Palhalli R. S. Rao, Eu K. Lee, Parimal C. Sen, Thomas W. Chapman, John R. Hetherington, and Benjamin A. Meyer.

Surgery.—Irma E. L. Mackenzie, Constance C. Reid, Frederick Blacklee, Ella D. Messenger, Boo E. Khoo, William A. F. Hurst, Mela R. Soni, Alexander S. Ballantine, and William T. Baker.

Midwifery.—Bailey G. V. Dias, Lionel H. Wilson, Frederick Blacklee, Ella D. Messenger, George R. Mitchell, John J. McKenna, Constance P. H. Hunter, William A. N. Chanmugam, Ryerley C. F. Leembruggen, Arumugam W. Rosiah, Ursula van Rooyen, Palhalli R. S. Rao, James C. Stenhouse, Mary A. McGill, Eu K. Lee, Parimal C. Sen, Thomas W. Chapman, John T. Fernandez, Benjamin A. Meyer, Max Camrass, Archie Franklin, and Alfred S. Hunt.

Medical Jurisprudence.—James Sharpe, Robert W. Schuch, James Cook, Lionel H. Wilson, Cyril A. Munro, Set C. Chee, Edwin H. Eastcott, John L. I. D'Silveira, Mikhail Younkim, Emile Fischbacher, Chin E. Toh, John D. Cooper, David D. Radford, Theodore Lipschitz, Mary D. Clark, John B. Panton, Nathanael J. Knoesen, and George R. Mitchell.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—Beginning on Monday, May 11th, is a three weeks' course in Diseases of the Nose, Throat and Ear at the Central London Throat, Nose, and Ear Hospital, consisting of clinical demonstrations on out-patients and in the wards, lectures, &c., and an operative surgery class will also be available.—At the Maudsley Hospital a month's course in Psychological Medicine will be held from May 4th to 28th. The course will include lectures and demonstrations on the different aspects of mental disease. Various forms of clinical instruction will be open to those attending the course.—A two weeks' special course in Diseases of Infants will be given at the Infants Hospital from May 18th to 30th. The comprehensive syllabus covers clinical demonstrations, "round table" consultations, lectures, and four visits to centres away from the hospital.—An afternoon course in Dermatology will take place at the Hospital for Diseases of the Skin (Blackfriars) from May 18th to 30th. The work will embrace instruction in the out-patient department and the venereal clinics.—For those in general practice it is proposed to hold a two weeks' course at the London Temperance Hospital from May 18th to Friday, the 29th, Saturday excepted. The course will begin at 4.30 P.M., and will consist of a clinical demonstration (with cases) lasting for one hour, followed by a short lecture at 5.30 P.M. Programmes of the special courses for May can be obtained from the Secretary of the Fellowship at 1, Wimpole-street, London, W.

MAUDSLEY HOSPITAL.—A series of six clinical demonstrations of Types of Mental Disease will be given at the Maudsley Hospital, Denmark Hill, London, S.E., by Dr. Edward Mapother, medical superintendent, on successive Wednesdays, commencing May 6th, at 2.30 P.M. The series will be illustrated by numerous cases. Fee for the series 1 guinea.

NAVAL MEDICAL COMPASSIONATE FUND.—At the quarterly meeting of the directors of this Fund, held on April 17th at the Admiralty, London, S.W., Surgeon Vice-Admiral Joseph Chambers, C.B., C.M.G., Medical Director-General of the Navy, in the chair, the sum of £125 was distributed among the several applicants.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Monday, April 27th.

ODONTOLOGY: at 8 P.M.
Clinical Evening:
Fellows and Members who are willing to show cases of interest are asked to communicate with the Hon. Secretary (Mr. Bayford Underwood, 26, Wimpole-street, W.) as soon as possible.

Tuesday, April 28th.

MEDICINE: at 5.30 P.M.
Papers:
Prof. Dr. E. Leschke (Berlin): Metabolism and the Sympathetic System.
Dr. O. Leyton: Hypoglycopyresis.

DISEASE IN CHILDREN
NEUROLOGY
THERAPEUTICS AND PHARMACOLOGY
} *Members of these Sections are* special invited to this meeting.

Friday, May 1st.

LARYNGOLOGY: at 5 P.M. (Cases at 4 P.M.)
Annual General Meeting:
Election of Officers and Council.
Cases and Specimens:
Shown by Mr. C. A. S. Ridout, *Dr. Dan McKenzie*, Sir James Dundas-Grant, Mr. G. W. Badgerow, Mr. H. A. Kisch, Mr. Walter G. Howarth, Mr. E. Musgrave Woodman, *Dr. P. Watson-Williams, and others.*
Dinner:
A combined dinner of the Sections of Laryngology and Otology will be held at the *Langham Hotel on Friday*, May 1st, at 7.30 for 8 P.M.

ANÆSTHETICS: at 8.30 P.M.
Annual General Meeting:
Election of Officers and Council.
Paper:
Dr. J. Blomfield: Accidental Damage during Anæsthesia.

Saturday, May 2nd.

OTOLOGY: at 10.30 A.M. (Cases at 9.15 A.M.)
Annual General Meeting:
Election of Officers and Council.
Paper:
Mr. Arthur Cheatle: The Mastoid Emissary Vein and its Surgical Importance (with specimens and lantern slides).
Specimens and Cases:
Shown by Mr. Arthur Cheatle, Mr. V. E. Negus, Dr. Dan McKenzie, Mr. Archer Ryland, and others.

ROYAL INSTITUTION, Albemarle-street, W.
TUESDAY, April 28th.—5.15 P.M., Prof. J. Barcroft: Effects of Climate on the Circulation (II.).
THURSDAY.—5.15 P.M., Mr. F. Kingdon Ward: Plant Hunting on the Roof of the World.
FRIDAY, May 1st.—5 P.M., Annual Meeting. 9 P.M., Prof. W. L. Bragg: Crystalline Structure of Inorganic Salts.
SATURDAY.—3 P.M., Mr. W. P. Pycraft: Use and Disuse Effect of Structure on Animals (II.).

ROYAL SOCIETY OF ARTS, John-street, Adelphi, W.C.
WEDNESDAY, April 29th.—8 P.M., Dr. Andrew Balfour: The Trend of Modern Hygiene.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.
MONDAY, April 27th.—11 A.M., Surgical Registrar: Surgical Wards. 12 noon, Mr. Simmonds: Applied Anatomy. 2 P.M., Mr. Addison: Surgical Wards.
TUESDAY.—10 A.M., Medical Registrar: Clinical Methods. 12 noon, Dr. Burrell: Chest Cases. 2 P.M., Mr. Banks-Davis: Throat, Nose, and Ear Dept.
WEDNESDAY.—2 P.M., Dr. Burnford: Medical Wards. 2 P.M., Dr. Owen: Medical Out-patients. 2.30 P.M., Mr. Donald Armour: Surgical Wards.
THURSDAY.—10 A.M., Dr. Grainger Stewart: Neurological Dept. 11 A.M., Sir Henry Simson: Gynæcological Wards. 2 P.M., Mr. MacDonald: Genito-Urinary Dept.
FRIDAY.—11 A.M., Dr. McDougal: Electrical Dept. 12 noon, Surgical Registrar: Surgical Pathology. 2 P.M., Mr. Sinclair: Surgical Out-patients.
SATURDAY.—10 A.M., Dr. Saunders: Medical Diseases of Children. 10 A.M., Mr. Banks-Davis: Operations on Throat, Nose, and Ear.
Daily, 10 A.M. to 6 P.M., Saturdays, 10 A.M. to 1 P.M.: In-patients, Out-patients, Operations, Special Departments.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, April 27th, to SATURDAY, May 2nd.—HAMPSTEAD GENERAL HOSPITAL, Haverstock-hill, N.W. Special Post-Graduate Course in General Medicine and Surgery. Lectures and demonstrations daily (second week).—QUEEN'S HOSPITAL FOR CHILDREN, Hackney-road, Bethnal Green, E. Post-Graduate Course in Diseases of Children. Lectures and demonstrations morning and afternoon (second week).—ST. MARK'S HOSPITAL FOR DISEASES OF THE RECTUM, City-road, E.C. Post-Graduate Course in Proctology. Lectures, demonstrations, and operations every afternoon (second week).

UNIVERSITY COLLEGE HOSPITAL.

FRIDAY, May 1st.—11 A.M., Prof. A. V. Hill: The Physiology of Muscle and Nerve. (First of four public lectures.)

UNIVERSITY OF LIVERPOOL POST-GRADUATE LECTURES. (At 3.30 P.M.)

TUESDAY, April 28th.—(At the Royal Southern Hospital.) Dr. F. H. Barendt: Common Skin Infections in Childhood.

WEDNESDAY.—(At the Northern Hospital.) Mr. T. P. McMurray: Arthrites of the Hip.

THURSDAY.—(At the Stanley Hospital.) Miss Nicholson: Ovarian Tumours.

FRIDAY, May 1st.—(At the Royal Infirmary.) Dr. Henry Cohen: Recent Therapeutic Advances.

MANCHESTER ROYAL INFIRMARY.

TUESDAY, April 28th.—4.15 P.M., Mr. D. L. Sewell: Empyema of the Maxillary Antrum.

FRIDAY, May 1st.—4.15 P.M., Dr. T. Craven Moore and Mr. J. Morley: Demonstration of Cases.

MANCHESTER BABIES' HOSPITAL, Burnage-lane, Levenshulme.

FRIDAY, May 1st.—8 P.M. (Post-Graduate Lecture), Mr. George Graham: The Use of Insulin for Young Children.

Appointments.

ASH, W. M., M.B., B.S. Lond., F.R.C.S. Edin., has been appointed Medical Officer of Health for Derbyshire.

BARR, W., M.B., Ch.B. Glasg., D.Sc. (P.H.), Medical Officer of Health for Rotherham.

BRUNTON, C. E., M.B., B.Ch. Dub., Research Pathologist to the Christie Hospital, Manchester.

DAVIES, G. I., L.R.C.P. Lond., M.R.C.S., Assistant Medical Officer, Lewisham Hospital.

HUGHES, E. R., L.R.C.P. Lond., M.R.C.S., Medical Officer and Public Vaccinator for the Holyhead District.

MCCULLAGH, W. McK., F.R.C.S. Eng., M.B., B.Ch. Belf., Assistant Surgeon to the Samaritan Free Hospital for Women, Marylebone-road.

RENNET, M. J., M.B., Ch.B. Aberd., Assistant Medical Officer of Health, Chester.

TAYLOR, J. S., M.B., Ch.B. Aberd., Senior Resident Medical Officer, Aberdeen City Fever Hospital, and Assistant Medical Officer of Health.

TIBBLES, SYDNEY, L.R.C.P. & S. Edin., Honorary Ophthalmic Surgeon to St. Pancras Dispensary.

Vacancies.

For further information refer to the advertisement columns.

Barnet, Wellhouse Hospital.—Res. M.O. £350.

Birmingham, Dudley-road Hospital.—Sen. Res. Surg. O. £700.

Birmingham and Midland Homœopathic Hospital and Dispensary.—Res. H.S. £175.

Bradford Royal Infirmary.—Two H.S.'s. Each £150.

Bristol Royal Hospital for Sick Children and Women.—H.S. £125.

Cairo School of Medicine.—Asst. Prof. of Chemistry. L.E.720.

Cambridgeshire Tuberculosis Colony.—Asst. M.O. £300. Also H.P. at rate of £100.

Carmarthen, Joint Counties Mental Hospital.—Asst. M.O. at rate of £350.

City of London Hospital for Diseases of the Heart, &c., Victoria Park, E.—H.P. at rate of £100.

Dublin, Dept. of Local Government and Public Health.—Travelling Fellowships.

Durban Corporation, Natal.—Asst. M.O.H. at rate of £900.

Eastbourne, Princess Alice Hospital.—Res. H.S. at rate of £175.

East Ham County Borough.—Asst. M.O. £600.

Harefield, Middlesex, County Tuberculosis Sanatorium.—Third Asst. Res. M.O. £400.

Holland County Council, Lincolnshire.—Asst. County M.O. £600.

Hospital for Epilepsy and Paralysis, Maida Vale, W.—Hon. Asst. P.

King's College Hospital, Denmark Hill, S.E.—Hon. Psychotherapists.

Liverpool, [illegible] Therapeutic Clinic.—Hon. Asst. P.

London County Council Mental Hospitals.—Eighth Asst. M.O. £[illegible].

London Lock Hospital, 91, Dean-street, W.—Temp. Hon. S. to out-patients.

[illegible] Hospital.—Hon. Visiting and Consulting [illegible].

[illegible] General Dispensary.—[illegible]

[illegible]—Asst. M.O.H. £[illegible].

Queen's Hospital for Children, Hackney-road, Bethnal Green, E.—Asst. S.

Rochford Hospital.—Asst. Res. M.O. £125.

Royal Free Hospital, Gray's Inn-road, W.C.—Third H.S.

Royal Society of Medicine, 1, Wimpole street, W.—Secretary. £800.

Ruthin Castle (Duff House), North Wales.—Jun. Res. P. £150.

St. Mary's Hospital for Women and Children, Plaistow, E.—Res. M.O. and Asst. Res. M.O. at rate of £175 and £130 respectively.

St. Pancras Hospital, Pancras-road, N.W.—Med. Supt, &c. £700.

Samaritan Free Hospital for Women, Marylebone-road, N.W.—Reg. at rate of £100.

Southampton, Free Eye Hospital.—H.S. £150.

Stoke-on-Trent County Borough.—Asst. M.O. £500.

Westmorland Sanatorium, Meathop, Grange-over-Sands.—Res. Asst. M.O. £350.

Whittingham County Mental Hospital, Preston, Lancs.—Two Temp. M.O.'s. Each £7 7*s.* weekly.

Winsley Sanatorium, near Bath.—Asst. Res. M.O. £250.

Wolverhampton and Staffordshire Hospital.—H.S. at rate of £150.

THE Chief Inspector of Factories, Home Office, London, S.W., announces the following vacant appointments.—Lyndhurst, Hants; and Calvert, Bucks.

Births, Marriages, and Deaths.

BIRTHS.

BROUGHTON-ALCOCK.—On April 12th, at Grosvenor street, W., the wife of Dr. W. Broughton-Alcock, of a daughter.

CLEMENTS.—On April 9th, the wife of Dr. W. A. Clements, of Daventry, Northants, of a daughter.

EVANS.—On March 26th, at Aden, Arabia, to Marjorie, the wife of Captain R. R. Evans, R.A.M.C.—a daughter.

GOODWIN.—On April 11th, at Acacia-road, St. John's Wood, N.W., the wife of Aubrey Goodwin, F.R.C.S., of a daughter.

HIGSON.—On April 12th, at a London nursing home, the wife of Dr. W. Davies Higson, "Eversley," Boxley-road, Maidstone, of a daughter.

MCCORMICK.—On April 11th, at St. John's Wood court, N.W., the wife of Dr. J. E. McCormick, of a daughter.

MARRIAGES.

OLIVER—BARRITT.—On April 16th, at Albert-road Wesleyan Church, Colne, Thomas Herbert Oliver, M.D., to Martha Florence Barritt, M.B., Ch.B., younger daughter of Mr. and Mrs. D. H. Barritt, of "Brantwood," Colne.

SYMONS—DE WILDE.—On April 18th, at the Church of St. Martin-in-the-Fields, London, Hubert Wallace Symons, M.B., F.R.C.S., Major, R.A.M.C. (T.A.), to Charlotta Dolores Naomi de Wilde, M.R.C.S., L.R.C.P., younger daughter of the late Mr. and Mrs. Henri de Wilde, of Utrecht and London.

DEATHS.

DUDFIELD.—On April 19th, *from appendicitis*, in London, Samuel Reginald Orme Dudfield, O.B.E. (Mil.), late Captain R.A.M.C., M.A., M.B., D.P.H., F.S.S., M.O.H. for Paddington for 30 years, aged 64.

DUDLEY.—On April 13th, at Portland-place, Bath, Brigade Surgeon Lieut Colonel William Edmondson Dudley, aged 86.

ELLIOTT.—On April 18th, after a short illness, Thomas Elliott, M.D., of Church-road, Tunbridge Wells, aged 75.

GODLEE.—On April 20th, at Coombe End, Whitchurch, Oxon, after a few hours' illness, Sir Rickman John Godlee, Bt., K.C.V.O., F.R.C.S., aged 76.

LIBBY.—On April 18th, at Rudyard, Staffordshire, Harold Samuel Libby, L.R.C.P., M.R.C.S.

RAYNE.—On April 17th, at St. Mary's Gate, Lancaster, Charles Alfred Rayne, M.D., aged 79.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

THE LANCET: SUBSCRIPTION RATES.

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REMOVAL OF BETHLEM HOSPITAL. — Formal notification is made of the intention of the City corporation and the governors of Bethlem Hospital to apply to Parliament in the present session for an Act to empower the transfer and purchase of property necessary for the removal of the institution to Monks Orchard Estate at Beckenham and West Wickham, in Kent.

Notes, Comments, and Abstracts.

HEALTH CONDITIONS IN THE FEDERATED MALAY STATES.

Mr. William George Maxwell, C.M.G., Chief Secretary to Government, is responsible for the annual report, on which the following summary is based. The Federation comprises four States: Perak, Selangor, Negri Sembilan, and Pahang. A census taken in April, 1921, showed that the population was then 1,324,890, having increased since 1911 by 27·7 per cent. Of this population 853,528 were males and 471,362 females. The Malay population was 510,821, and the Chinese population 494,548, whilst 305,219 persons of Indian nationality were enumerated, more than four-fifths of these being Tamils. The European population rose from 3284 in 1911 to 5686 in 1921, of whom 92·3 per cent. are of British origin. The most satisfactory feature of the census is that all the statistics, of sex, of marriage, of age, and of birthplace, show that the immigrant races, who have done so much to develop the resources of the Federated States, are ceasing to look upon these States as a place of temporary sojourn, and are tending more and more to make their permanent home here. The birth-rate in 1923 was 25·00 and the death-rate 24·10 per mille. There were 6120 deaths of children under 1 year of age, being an infantile mortality of 180·07 per mille.

Causes of Sickness and Death.

As usual, malaria heads the list as the most important cause of sickness and deaths. The number of deaths recorded was 15,516 (11·17 per mille). Considerable attention is being focused on the educational side of the malaria problem and the arousing of public interest therein. Malaria is a notifiable disease in many sanitary board areas. Difficulty continues to be experienced in inducing the public to avail itself of the facility for hospital treatment of venereal diseases in the early stages. Public education regarding these diseases is, however, being actively promoted. Venereal disease clinics, centres, and propaganda are in process of organisation. Injections of novarsenobenzol were given in 29,675 cases. The campaign against yaws was continued throughout the year with gratifying results. Injections of novarsenobenzol were given to 31,135 persons, as against 22,972 in 1922. Little trouble is found in persuading people to undergo treatment, and considerable progress has been made in the eradication of this disease. Sixteen cases of plague, 12 of cerebro-spinal meningitis, 32 of small-pox, and 17 of diphtheria occurred. There was no case of cholera.

Infant Welfare.

The infant welfare centre in Kuala Lumpur has made extraordinary progress. The centre is primarily an educational institution, which provides for young mothers of all nationalities advice and teaching in the care and management of their infants. The work of the centre is directed rather to the supervision of the health of the infant and the education of the mother than to the treatment of the sick, but the incidental treatment of simple ailments is nevertheless included within its scope. The staff consists of a lady medical officer, a European nursing sister, and six health visitors. "Health visiting" is an essential factor in the programme of the infant welfare, and it is satisfactory to record that the prejudice against the invasion of the home by strangers, which is even more marked in the East than in the West, is gradually disappearing as the mothers are understanding that the object of the visit is to help and not to harass. Particular attention is given to antenatal work, and to education and propaganda. The Kuala Lumpur centre has been so successful that arrangements are being made to extend this form of activity to other places.

Hospitals and Dispensaries.

There are in the Federated States 4 European hospitals, 40 district hospitals, 3 women's hospitals, 3 leper asylums, 7 gaol hospitals, 1 quarantine camp (for immigrants), 4 vagrant or decrepit wards, 1 mental hospital, 14 outdoor dispensaries, and 10 town dispensaries. During the year there were 87,310 indoor patients. Outdoor patients numbered 527,411, as compared with 433,111 in 1922 and 329,310 in 1921; the increase is due in a great measure to the travelling dispensaries which were started towards the end of 1922. These bring medical requirements to sufferers living in distant places removed from ordinary medical facilities. On Dec. 31st the patients at the only institution for mental disorders—the Central Mental Hospital, Tanjong Rambutan—numbered 900 males and 251 females. During the year 358 men and 111 women were admitted. The increase in the number of female admissions is noteworthy; alcohol accounted for 42, and syphilis for 25 admissions. The commonest form of mental disease on admission was recent melancholia, with 115 victims.

In the department of research the investigation into the disease meliodosis was continued throughout the year, and additional evidence obtained in demonstration of its specific character. The first recorded case of the disease in a European came under observation. A rare case of typhoid septicæmia was discovered and examined. The Far Eastern Association of Tropical Medicine at the Fifth Congress held in Singapore in September discussed at length the subject of beri-beri, and finally adopted a number of resolutions, including a recommendation that each of the Governments interested and the International Health Board of the Rockefeller Foundation be invited to nominate a representative on a beri-beri committee which shall report at the next Congress. Investigations were conducted in connexion with cases of plague which occurred in Kuala Lumpur during the months of April and May. Live rats examined showed a flea index of 3·0, and all fleas were of the species *Xenopsylla cheopis*. These results dispose of the surmise that freedom from serious outbreaks of plague in this country might be due to the absence of an efficient transmitting agent. Further valuable research into the treatment of malaria by quinine and other alkaloids of cinchona has been conducted.

Research into the subject of the seasonal prevalence of species of anopheline mosquitoes was continued. As a result of investigation covering a period of three years, the definite conclusion appears to emerge that these mosquitoes occurring in this country have no definite breeding season, but breed throughout the year, and increase in frequency when conditions become suitable. Investigation work was undertaken on estates in Johore and at Sabak Bernam. At the latter place five specimens of *A. barbirostris*, a species hitherto considered to be innocuous, were found to be infected, and there appears little doubt that the species is an important factor in the outbreak of malaria there.

Temperature and Rainfall.

The temperature of the west coast of the Malay Peninsula has but a small daily range and little appreciable variation. On the east coast, however, the north-east monsoon, lasting from November to March, causes a distinct meteorological contrast with the rest of the year as regards wind and rainfall. Records from typical stations on the west of the peninsula, where the south-west monsoon is broken by Sumatra, show a decrease of rainfall from May to August. At Kuala Lipis, on the east of the main range, there is a general rise in rainfall from February until May, succeeded in some years by a distinct drop in July and August; there is a further rise culminating in October and November, followed by a fall to moderate rainfall in December and January. Charts, however, cannot bring out two points: the brilliant sunshine, which is the rule during the morning, and the dry spells of a fortnight or more when the grass becomes parched. In the mountains the rainfall is very high, the yearly average at Maxwell's Hill above Taiping from 1912–19 being 258 inches. At Telebu in Negri Sembilan, the driest station where records were kept, the average for 1905–19 was 60 inches. The heat, owing to the moisture of the atmosphere, is at times oppressive, although 100° F. has never been recorded in the shade.

DETERMINATION OF THE TOTAL MASS OF THE BLOOD.

IN a recent issue of the *Archives de Cardiologia y Hematologia* (vol. iii., March, 1924), of which we have received a reprint, Drs. F. Sanchis Perpina and R. Diaz Sarasola describe a method of determining the total mass of the blood, which is a modification of that employed originally by Harris and Loewy in America as follows: (1) They first determine the relative amounts of serum and blood corpuscles by centrifugalising in a graduated tube 10 c.cm. of the blood; (2) they inject intravenously 1 c.cm. of a watery solution of Congo-red which has been determined colorimetrically; (3) after five minutes another 10 c.cm. of the blood is taken and centrifuged, and the serum is then compared in Hellige's colorimeter with a 1 per cent. solution of Congo-red in serum. They give a table of equivalents between the colorimeter scale and the total quantity of serum, which presumably has been arrived at by adding a 1 per cent. solution of Congo-red to a known quantity of serum and from this they calculate the amount of serum adding in the corpuscles. The table gives up to 600 c.cm., which has been sufficient for their experiments on the dog. The authors admit that the method is not very exact, putting the limit of possible error at 8 per cent., as verified by animal experiment so far as possible. If the scale is prepared as suggested, the question may be asked: Is the Congo-red solution taken up by blood in vitro in the same proportion as when it is circulating in the tissues?

"GERM DISSEMINATION."

A MEDICAL man writes to us, under this title, drawing attention to the complete recklessness not only of the public but of individuals who from their position should know better, as to the possible spread of infections from the coughing, sneezing, and nose-blowing performances of the victims of catarrh. Our correspondent is himself a pulmonary subject who, as he says, "personally coughed and sneezed my way through life," and he has found it practicable through the use of relays of paper handkerchiefs and an invariable watchfulness to secure the public as well as the members of his family from the chances of infection due to carelessness. As an example of such carelessness he says: "Behold no less a personage than the M.O.H. of my borough, who at great length and with great particularity erroneously diagnoses his complaint as recurrent disease of the antrum, coughing and sneezing to the peril of anyone within the range of ten yards, and emphasising his sufferings and rounding his periods with an oratorical flourish of the handkerchief." His visit was followed by an outbreak of influenzal colds.

By a coincidence the situation is the subject of the illustration which follows, reproduced from the April *Bulletin of the City of Chicago Municipal Tuberculosis Sanitarium.*

The legend beneath is:—

"This is the man with the cold,
He shares his germs with neighbours and friends,
And keeps the children from growing old."

The picture is one that we have all seen in our own trains, as well as in buses and theatres, well-educated citizens appearing to believe that if they conform to the printed regulation against spitting—and save in the lowest classes the habit has largely disappeared as an ordinary conformity to manners—they have taken all the precautions required of them against the spread of infection.

"NURSING DON'TS."

AT the fifteenth annual Hospital, Nursing, and Midwifery Exhibition and Conference, which is being held this week at the Central Hall, Westminster, Dr. George Steele-Perkins delivered on Monday, April 20th, an address to nurses, in which he gave his hearers the crystallised fruits of much practical experience in the little details that make for the comfort of the sick. The lecture was entitled "Nursing Don'ts," and the speaker hoped that by setting red lights at the pitfalls of nursing, the right road might more easily be followed. Out of the wide range of subjects covered, we might with profit reproduce a few of Dr. Steele-Perkins's wise utterances, chosen at random. He says to nurses:—

Don't knock against a bed—to do so is very painful to gouty and rheumatic patients, and to patients in pain—it is very unpleasant to *all* patients and shows you are careless, and hence a patient may lose confidence in you.

Don't be high and mighty—study the convenience of the people with whom you are, while also maintaining your professional dignity.

Don't tell stories to endeavour to show the skill of your pet doctor.

Don't stay in the sick room *all* the time of the doctor's visit. It is tactful and thoughtful to retire, so that a patient can have the opportunity of making any complaint should he wish to do so, and which he might not care to make before the nurse.

Don't say "Dear" to any female patients over 18—they do not like it.

Don't neglect to cleanse your thermometer in the presence of your patient—patients can't help the thought "into whose mouth did that thermometer go last, and I wonder if it has been cleaned since?"

Don't be harsh on a patient's relatives. They may have no medical knowledge, but they are naturally anxious and worried. They mean well, even if they are sometimes fussy.

Don't expect the relatives in a private house to be invisible, as in hospital, only existing, as it were, between three and four on visiting days.

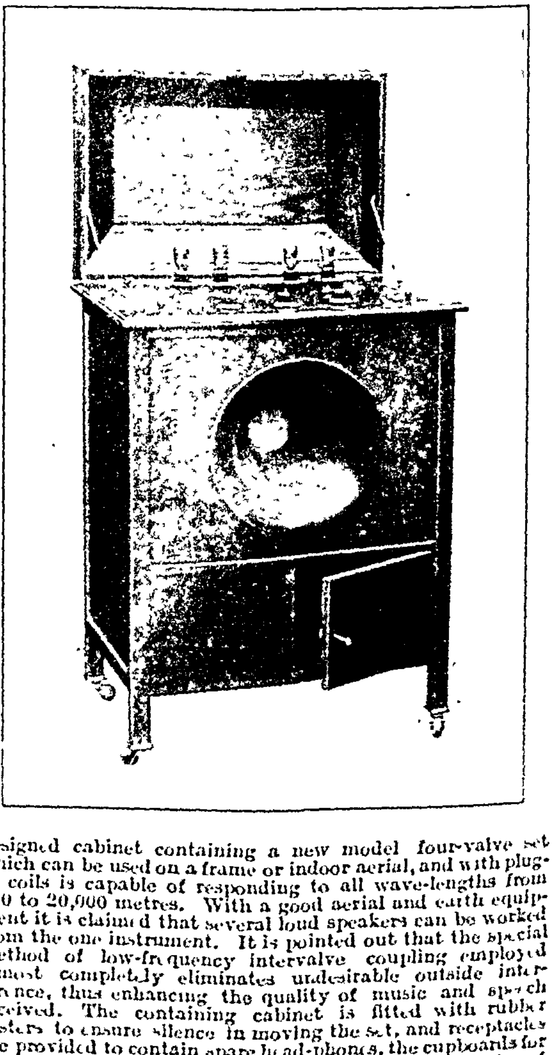
Mutatis mutandis, others besides nurses might do well to [illegible] a few of these points.

THE CURE OF PRESENT DISCONTENTS.

AN anonymous writer in the *Bath Herald*, stimulated by the Prime Minister's recent plea for a spirit of goodwill and coöperation among all parties, pointed out recently that one relief for our present disabilities would be for each one to disallow in himself or herself the desire for more money to expend on objects wrong in themselves or in excess. This is topical counsel for the season we have just passed, and sound advice at all times. The writer enters a plea for economy and the banishment of luxury, two things which must escape exact definition, as both are conditioned by circumstances. Rightly interpreted, however, and exercised, these virtues would promote the health and well-being of the community to an amazing extent. Some of the illustrations which the writer gives in proof of the lack of these virtues among the community are very familiar but none the less forcible. Obvious waste of food is a social crime, but money spent reasonably on entertainment improves the work done; such expenditure becomes unreasonable only when the output or standard of work suffers through excess of amusement. Betting by introducing an element of complete chance into domestic budgets must always be uneconomical, while the writer would find large endorsement to-day of his view that wines and spirits should be used as medicines rather than daily beverages.

WIRELESS IN HOSPITALS.

THE use of broadcast receivers in hospitals and kindred institutions has stimulated Messrs. A. J. Stevens and Co., Ltd., of Walsall-street, Wolverhampton, to construct a radio-receiving set particularly adapted for institutional use. As shown by the illustration, it consists of a specially designed cabinet containing a new model four-valve set which can be used on a frame or indoor aerial, and with plug-in coils is capable of responding to all wave-lengths from 150 to 20,000 metres. With a good aerial and earth equipment it is claimed that several loud speakers can be worked from the one instrument. It is pointed out that the special method of low-frequency intervalve coupling employed almost completely eliminates undesirable outside interference, thus enhancing the quality of music and speech received. The containing cabinet is fitted with rubber casters to ensure silence in moving the set, and receptacles are provided to contain spare head-phones, the cupboards for the batteries being fitted with lock and key. The price of this hospital set is £17 plus the Marconi royalty of £2 10*s.*



The Harveian Lecture

ON

INDUSTRIAL FATIGUE.

Delivered before the Harveian Society of London on April 23rd, 1925,

BY CHARLES S. MYERS, C.B.E., M.D.,
D.SC. CAMB., F.R.S.,
DIRECTOR OF THE NATIONAL INSTITUTE OF INDUSTRIAL PSYCHOLOGY.

FOR a member of the same College in Cambridge and of the same hospital in London as William Harvey, it is a special honour to be invited to give this address in his memory. Industrial fatigue must have existed in Harvey's time, but under conditions so widely different from those now obtaining that it could not attract public attention and could not receive such scientific treatment as is possible to-day.

DEFINITION OF INDUSTRIAL FATIGUE.

I shall be expected at the outset to define precisely what is to be understood by industrial fatigue. It will be urged that since the ultimate aim of science is measurement, an exact knowledge of what it is that we are endeavouring to measure must be essential if our procedure is to be scientific. But do we not measure electricity despite our ignorance of its nature? And may we not by statistical methods even measure a common factor affecting a number of different phenomena, without knowing anything whatever of the nature of that factor beyond the fact that it is a common determinant, among others, of those phenomena?

TWO GROUPS OF TESTS.

Assuredly the earliest workers on the subject of industrial fatigue did not concern themselves with its definition or with any careful inquiry into its nature. They set about devising tests which would reveal its presence. Those tests fall into two groups. The first group consist of brief tests of efficiency which were applied to the worker at different times of the day or week, and compared in regard to their results. Thus the average of two or three successive grips of the dynamometer was registered, first, say, in the early morning, then at mid-day, next in the early afternoon, and finally at the end of the day's work, and the difference or lack of difference between the strength of the worker's grip at different hours of the day was held to indicate the presence or absence of industrial fatigue. Other simple tests were employed in the same way—such as a few reaction times, keenness of sight or hearing, the delicacy of discrimination between two near simultaneous touches of the skin or the speed of learning, so as immediately and correctly to reproduce a short series of numbers or letters. And when it became obvious that the worker could simulate fatigue by intentionally doing worse at the tests in the course of their application, tests were introduced which were independent of voluntary control, such as involved a record of the pulse-rate or of the time the skin took to recover its colour after being blanched by momentary pressure.

But another important complicating influence still remained—that of the feelings. The worker might be at one time annoyed or at another relieved by being interrupted in his work in order that these tests might be applied to him; in the early stages of their use he might be alarmed by the apparatus involved, or in later stages he might be bored by them. Such affective variations, together often with the effects of practice, could not fail to obscure the revelation of industrial fatigue, even if—as was tacitly assumed—the tests were competent to reveal its presence and to measure its degree commensurately with their results.

The second group of tests were in themselves tests of fatigability. A relatively lengthy task was imposed—e.g., repeated flexion and extension of a single finger-joint engaged in lifting a weight until the joint could no longer be moved, repeated additions of pairs of numbers, the erasure of a prescribed letter in printed matter, say for an hour, a work curve being obtained, movement by movement, or minute by minute, which was held to indicate the fatigability of the subject, the curves being compared at different times of the working day, week, or season. But here, again, the influence of practice often proved a serious practical difficulty. Moreover, the problem of whether, and if so how far, fatigue at a given occupation was local or general was overlooked. And the degree of correlation between industrial fatigue and the evidence of fatigue revealed by the tests was unknown and apparently unknowable.

Many of these tests, especially after experience sufficient to remove the complicating effects of practice, became so automatic and were carried out so unconsciously as to be incomparable with industrial conditions in which the work was more varied and required the exercise of a certain skill and judgment. The tests were necessarily of a very simple character, measured by quantity rather than by quality of output. In view of all these difficulties, it is hardly surprising that the interpolation of so-called fatigue tests brought discredit on the early attempts to estimate industrial fatigue.

NATURE OF FATIGUE.

Let us, then, turn to a consideration of the nature of industrial fatigue, dealing first with occupations especially involving muscular work. Here, it might be thought, is a field in which the ergograph, recording flexion and extension of an isolated joint within the intact organism, might yield serviceable evidence of the extent of fatigue. Here, too, it might be expected—from the resemblance of ergographic conditions to those of the muscle-nerve preparation—that our knowledge of the physiology of muscle would render valuable help in its application to industrial fatigue. We have reason to believe that the isolated muscle tires because it no longer has sufficient manufactured material (of the nature of glycogen) at its command which will enable further contraction to take place, breaking down into lactic acid, carbonic acid, &c., or because the muscle-fibres have become clogged by the non-removal and the accumulation of such poisonous products of decomposition.

But the ergographic tracing is not a simple record of either of these conditions. For, when the subject has reached the stage when he is quite impotent to produce further movement of his finger, he will immediately be able to furnish another good ergogram, if the weight which his finger is lifting be slightly reduced. From another aspect, too, the stage of absolute exhaustion which he has reached is only apparent, so far as his muscle is concerned. It will still readily contract if the stimulus of an electric current be applied to his arm over the appropriate peripheral motor nerve. The so-called fatigue effects revealed by the ergograph are very largely of nervous origin, due to afferent impulses ascending from the tiring muscle and inhibiting the transmission of efferent impulses which would otherwise throw it into action. They are protective against truly muscular exhaustion, and we are ignorant of the relation between such nervous inhibition and the degree of truly muscular fatigue occurring. We do know that under conditions of severe general fatigue such inhibition may fail, and thus a better ergographic tracing—i.e., a larger amount of work—may be compatible with increased fatigue. Such an experience occurred to my knowledge during a prolonged series of ergographic records daily taken by the late Dr. Rivers, who one day felt so tired from an exceptionally arduous day's mental work that he was sorely tempted not to tire himself further with the taking of the usual evening's ergograph tracing. But, resisting the temptation, he obtained one of the best records of muscular work throughout the whole series of his experiments.

We have also to remember that the conditions under which the industrial worker carries out his daily work are very different from those under which an ergographic record is taken. The worker does not confine himself to the use of a single muscle. By varying his posture, as he tires, he often brings other muscles into play to carry out the same operations as heretofore. He does not work his hardest at each muscular contraction, as the ergograph demands of its subject. More or less unconsciously he adapts his expenditure of work to the length of his unbroken working spell or working day.

The fatigue which such a worker suffers is not merely or principally a fatigue of effort; it is also largely a fatigue of skill. There is no industrial work that is, strictly speaking, unskilled. For there is no occupation in industry in which there are not good and bad methods of carrying it out. The best worker is he who has become expert in the use of the best movements. He acquires his skill by coördinating visual, tactual, or auditory sensations with movements, by synthesising relatively simpler, previously acquired movements with one another so as to perform more complex movements, and by analysing and suppressing needless movements so as to obtain cleanness and economy of movement just as a clever artist eliminates all but the essentials in a sketch or caricature. Coördination, integration, and inhibition are thus the essential nervous processes for securing the minimal expenditure of muscular effort and for yielding the maximal efficiency of output. At the same time, the field of consciousness becomes reduced both in extent and in intensity. The need for widely diffused attention and for continuous judgment becomes replaced by the establishment and maintenance of an appropriate conscious attitude or posture in which the work is carried out to a large extent automatically. When fatigue arises, the discarded conscious attention to details is revived. Voluntary effort replaces intuitive behaviour, but with much less success. Output is reduced not only in quantity, but also in quality. The expert worker falls to the level of the inexpert worker. Old faults reappear. Finally, disorder replaces order of movement.

Moreover, apart from the fatigue of muscular contraction, there is a fatigue of the posture of the muscles employed, a fatigue of the central nervous "set" which is responsible for the preservation of the favourable posture, a fatigue, it may well be, of the directive process establishing that set. Lastly, not only are the various simultaneous movements integrated together by practice so as to form a single whole, not only is there this integration of a spatial kind, but practice also brings about an integration of a temporal kind. Successive movements are integrated together, and here the influence of rhythmical performance is of the greatest aid. The value of acquiring a proper rhythm in repeated movements can hardly be exaggerated. This kind of integration likewise breaks down in fatigue.

We see, then, that if, so far as the performance of movements is concerned, industrial fatigue is to be viewed in the light of a fatigue of acquired skill, we are far removed from an explanation of industrial fatigue in terms of muscular metabolism. The fatigue must be traced largely to disorders of nervous integration, inhibition, and coördination. Its site must lie in the central nervous system.

Illustrative Examples.

Two examples, illustrative of this conclusion, may be cited from the reports of the Industrial Fatigue Research Board. In the course of their investigations into the process of "buffing" Farmer and Brooke[1] obtained wattmeter records of workers roughing (removing imperfections and scratches from) spoons and forks throughout the day. These records enabled the experimenters to detect the varying number and duration of the strokes and the varying pressure with which the workers applied each spoon and fork to the polishing wheel. As the output diminished during the day's work the worker's strokes increased in number and duration, while the pressure with which the strokes were applied became greater. In other words, with the onset of fatigue, the worker began to use extravagant energy, although the output was diminished. The skilled worker became an unskilful worker, just as happens in sport with a tired eight or a tired golfer.

The second example[2] illustrates a natural corollary from our results—namely, that it is the less efficient worker who is most susceptible to fatigue. In their investigations in boot and shoe factories, Loveday and Munro observed that those workers who achieved a high output suffered far less than their relatively inexpert comrades from the fatigue of the week's work. Whereas the latter would reach their highest output at the middle of each week and fall off, often considerably, towards its end, the former would maintain their high level to the end of the week with very little or no diminution. We conclude that it is the unskilled and less productive worker who uses the most effort and who is the first to tire.

PHYSIOLOGY OF FATIGUE.

Industrial fatigue being thus pre-eminently due to fatigue of the central nervous system, we turn expectantly to our knowledge of the physiology of central nervous fatigue, but only to find an almost complete ignorance of the subject. So far as the white matter is concerned, nerve-fibres are believed to be virtually indefatigable; the peripheral nervous impulse appears to be of a physical rather than a chemical nature; the metabolism of the brain and spinal cord has so far proved almost inappreciable in detectable effects.

The physiological study of the fatigue of reflexes has yielded strange results, inexplicable by present conceptions of its nature. Fatigue in the central nervous system, as mechanically conceived on the basis of the study of isolated muscle, appears to be safeguarded by "the interplay of opposed agents,"[3] those of excitation and inhibition, each of which must be regarded as a relatively separate, active process and presumably as separately amenable to fatigue.

We started by treating the human organism as a mechanical engine which becomes tired when it has no longer any explosive material at its command or when it becomes clogged with the products of its combustion. But we have been led to consider central nervous fatigue as consisting not so much in the wearing out of the processes of excitation and inhibition, as in a loss of coördination, a regression from later acquired skill to lowlier earlier levels of movement, the substitution of disorder for order, the loss of higher control, organisation, and direction. Further, physiology is at present powerless to lead us. It can only recognise the facts. Biology now admits that the living organism is something more than a mere mechanism, that mere chance variations are inadequate to explain the evolution of the living world, that order and direction, culminating in purposeful individual minds, have to be taken into account. We have reached the conclusion that industrial fatigue is primarily a breakdown in that order, a loss of coördination and direction, an impairment of that psycho-physiological feature which in its highest manifestation distinguishes the mental from the merely living, in its lowest the living from the purely mechanical organisation.

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[1] Reports of the Industrial Fatigue Research Board, No. 15, pp. 15–54.

[2] Ibid., No. 10, pp. 16–28.

[3] Sherrington: Proc. Roy. Soc. B, 1925, xcvii., 513.

MEASUREMENT BY EFFECTS.

In our impotence to express this change in mechanical terms, we can only measure industrial fatigue by its direct effects. We can only safely study its effects by recourse, not to the interpolation of so-called fatigue tests, but to the actual industrial work curve. We need to measure output hour by hour throughout the working day and to study how the output rises and falls both in quality and in quantity at different hours of the day, on different days of the week, and so on. We study both curves of total output and curves of spoilt work for different kinds of work. We introduce improvements in environment—in illumination, ventilation, temperature, &c.—improvements in arrangement of the worker's material, improvements in the worker's posture, and the number, nature, and rhythm of his movements, the introduction of rest pauses in a long previously uninterrupted spell of work, better selection of the worker according to his innate abilities and interests. And we separately study the effects of these changes, one by one, upon the work curve.

We know that when the worker starts his work he has to get into his stride, to warm up to his work, to overcome distraction, to settle down to a rhythmical method of working. We know that when he resumes work after a pause he also suffers at first from having to overcome such detrimental effects. But the psychologist does not confuse these effects with loss of practice. A few minutes' absence from work does not produce any loss of skill any more than does a few minutes' pause between the repetitions of a well-learnt poem produce a loss of memory. What is lost in a short rest pause is not loss of practice but loss of what the psychologist calls incitement and settlement.[4]

During a rest pause, moreover, the effects of fatigue disappear, and in general the beneficial effects of a rest pause so far outweigh the detrimental ones that an increase in output results despite the somewhat lessened period of time actually spent at work. Thus, in the operation of packing, Farmer and Eyre, experimenting on behalf of the National Institute of Industrial Psychology,[5] obtained more than a 5 per cent. increase of output after introducing a rest pause of seven minutes in the middle of the morning's and afternoon's work, although by so doing there was a reduction by 3 per cent. in the total number of hours worked. The National Institute obtained by similar means a similar result—more than a 5 per cent. increase of output was obtained by Miles and Bevington[6] in the process of polishing celluloid articles. Other increases, varying between 5 and 10 per cent. of output, are recorded by the Industrial Fatigue Research Board.[7]

We have yet to ascertain why rest pauses are apparently in exceptional cases of no avail. Where they have succeeded the workers have eagerly welcomed them, preferring definite organised rest pauses to the irregular periods of rest which they would otherwise have surreptitiously taken in a long officially unbroken spell of work. Rest pauses require for their successful introduction a careful preliminary study of the work curves, so that the best moment for their introduction and their duration may be determined. The work curves also require study for an accurate realisation of the effects of the rest pause. Mere increase in output is not a sufficient result to please the industrial psychologist. He demands not merely a higher *level* of curve, but an improved *form* of curve. Particularly he wants to avoid a severe fall of the work curve towards the end of the working spell.

The good effects of a rest pause, as, indeed, the good effects of reducing the total number of hours worked, may not be fully evident until several weeks or even months have elapsed. The worker needs time to become adapted to the more advantageous conditions of his work. Ideally each worker needs a different length of rest pause and a different moment for its introduction in order to produce its best effects. In practice, however, the workshop, like the school class, has to adopt procedures which are most advantageous to the majority of its members.

MENTAL FACTORS.

The work curve is likewise complicated by the presence of spurts—one of which is specially apt to occur when the end of a piece of work or the end of a spell of work, or the approach of payment is in sight. Besides the end spurt there may also be an initial spurt, when the worker comes fresh to his task with a degree of energy which soon falls off after the first few minutes. The work curve is also marked by spurts and falls at other periods, due to various mental and physical influences.

Of these mental factors the most important are of affective nature. The worker's feelings alter at his work. The feelings are of enormous importance in influencing mental and muscular work. On the one hand, they may conflict with the general attitude he has to maintain and the efforts which consciously or unconsciously he has to expend; or, on the other hand, they may assist in those directions. Irritation and boredom are obvious examples of the former, contentment and interest of the latter.

The influence of feelings of pleasure and displeasure and of excitement and depression on the muscular effort of which a person is capable have long been recognised by physiologists and psychologists. But the influence of conflicting feelings on the orderly character of mental and central nervous processes was only adequately realised after experience of the psycho-neuroses arising in the course of the war. The phenomena of disorder and regression there met with are but a pathological exaggeration of the same phenomena which I have stressed earlier in this address as occurring in industrial fatigue.

Just as efficient muscular work demands the maintenance of a favourable posture, so efficient mental work demands the maintenance of a favourable attitude. This attitude is, of course, maintained more easily in states of contentment and interest, less readily in states of resentment and boredom. So long as the worker is happy and interested, the favourable attitude can be preserved without effort; its preservation involves the successful inhibition of all antagonistic, incompatible attitudes. Such inhibition is apt to tire when interest fails. Discordant ideas or movements are no longer automatically suppressed. They become manifest and themselves inhibit industrial work. Conscious voluntary effort has to be invoked in order that the mental or motor task may be continued. As this wearies, boredom is felt and the need for a change of attitude becomes imperative.

We now realise how far the boredom arising from an uncongenial task may be safeguarded by a more careful selection of the worker. Too intelligent a worker for the kind of repetitive work in which he is engaged may be as unsuitable as a worker who has not sufficient intelligence for another job.[8] The work must be adapted not only to the level of general intelligence, but also to the special abilities of the worker. As a general rule, the dull worker prefers a more monotonous job. He does not want change. He safeguards himself against boredom by recourse to the phantasies of day-dreaming, to conversation, song, &c.

The effects of boredom are at first those of localised fatigue. They may be dispelled by a change of work. It has recently been found by Vernon and Bevington[9] that changes of muscular posture are extremely effective in preventing the signs of fatigue. So, too, the change of mental attitude produced by a change in the character of work may be fully as effective as the introduction of a rest pause. In one investigation Miles and Skilbeck, on behalf of the National Institute of Industrial Psychology, obtained an increase in output amounting to 14 per cent. by allotting two short periods of the morning's and afternoon's work to the collection of material by the worker, instead of distributing that collection, as had happened for the most part previously, over the working day. Similar results have since been obtained in laboratory and factory experiments conducted by Vernon and Wyatt for the Industrial Fatigue Research Board.[10]

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[4] Myers: Text-book of Experimental Psychology, Part I., pp. 180–187.

[5] Jour. of Nat. Inst. Ind. Psych., vol. i., pp. 89–92.

[6] Ibid., vol. ii., pp. 269–273.

[7] Industrial Fatigue Research Board Report, No. 25.

[8] Burnett and Wyatt: Jour. of Nat. Inst. Ind. Psych., vol. ii., pp. 18–30.

[9] Industrial Fatigue Research Board, Report No. 29 p. 18 ff.

How far boredom is an important factor at the present day in reducing industrial output cannot easily be determined. The worker's initial spirit of "buck" and interest upon entering an occupation may be so easily broken after a few weeks' engagement on routine work that he soon becomes adapted to carry out his work by recourse to those safeguards against intolerable boredom which I have already mentioned. But if actual boredom is lacking, there can be no doubt that a vast increase in quantity and quality of output could be effected if steps were taken by introducing adequate incentives to increase and to maintain the worker's interest, and hence his conscientiousness. A careful study of the most effective incentives to efficient work is therefore of the greatest importance.

Incentives to Efficient Work.

One of the National Institute's investigations[11] affords a striking demonstration of the improvement upon quality of output which may result from alleviation of the workers' irritation, annoyance, and worry. It was concerned with the breakage of china in one of the tea-shops of a large catering firm, and its success was largely due to an early recognition by Miles and Eyre, the investigators, that carelessness was not an adequate explanation of the breakages. Records were carefully taken every two hours throughout the day showing where, when, and what articles were broken. Danger points were thus revealed, and so far as possible removed. But the investigators' attention was mainly directed to overcoming the *psychological* causes of breakages, diminishing discomfort, overstrain, and sources of irritation, and facilitating the flow of work. Curves of breakage frequency, in other words of spoilt work, were constructed both before and after the changes recommended by the Institute had been carried out. Not only was there a diminution of over 53 per cent. in the number of breakages, not only was the curve of spoilt work at a lower level throughout the day, but it showed a far better form. The previous well-marked rise of the curve towards the end of the day's work disappeared. We may reasonably conclude, therefore, that removal of the sources of worry and irritation materially reduced the workers' fatigue. They expressed unfeigned appreciation of the improvement in working conditions introduced by the Institute.

The curve of spoilt work throughout the day has been shown by Ryan and Sargant Florence[12] to be characterised by the same features as that of output, though, of course, in inverse direction. It tends to be greatest during the initial and final hours of the morning's or afternoon's spell of work. It is also greatest among the less expert workers. The causes and hourly frequency of industrial accidents show a close resemblance to those of spoiled work. Over-pressure and irritation, especially when accompanied by fatigue and inexperience, increase the hourly frequency of accidents. Mere fatigue alone may not do so. For the worker may for a time at least work equally cautiously, but at a far lower level of output. It is when he is unduly pressed or excited that spoilt work or accidents become more frequent, and especially when such over-pressure, irritation, and worry are so great as, or have continued long enough, to be associated with fatigue.

Fatigue or Inhibition?

At the outset we might have been disposed to define industrial fatigue as that result of previous industrial work which is manifested as a diminution in output. But, as has been shown, fatigue may temporarily result in an increased amount of work due to the tiring of higher-level inhibition and control, and it may result from many other causes than that of previous industrial work. The worker may for quite other reasons come to his work in a fatigued state. His lack of training, his use of needless movements, his whole mental and physical environment may be the true causes of his fatigued condition rather than the number of hours which he has already worked.

Further, diminution of output as the work continues may result not only from fatigue, but also from lack of incentive or boredom, resentment, and worry—causes which if prolonged and resisted will ultimately cause fatigue, but the removal of which in their early stages of occurrence will at once produce a rise of output. Their adverse influence on output is initially due to temporary inhibition. How are we to distinguish industrial fatigue from inhibition? Only, I think, by observing the effects of removing their respective causes. If the reduction of output at once disappears, we may justly attribute its causes to previous inhibition. If the reduction of output is gradual, we may (with less certainty) attribute its cause to previous fatigue.

In the majority of cases under present-day conditions industrial fatigue is not to be reduced by shortening the hours of the day's work. It is to be combated rather by the avoidance of too long uninterrupted spells of work, by the introduction (after careful study of the work curve) of rest pauses, and of change of work and posture, by determination of the best movements of the worker, by systematic training of the worker in those movements, by selection of the worker so that his occupation is adapted to his innate abilities, by the abolition of causes of needless resentment, irritation, and worry, by the introduction of suitable incentives to work, by the provision of a good physical environment in regard to illumination, temperature, humidity, ventilation, food, &c.

As we have seen, industrial fatigue is too complex, and our knowledge of the physiology of the nervous system is too rudimentary, to allow of a definition of its character in physical and chemical terms. Indeed, it may be of a nature that forbids complete definition in the language of pure mechanism. At present it can only be studied and estimated by means of industrial work curves—curves of output and curves of spoilt work, indicating variations in the quantity and the quality of the worker's products. We must never forget that industrial fatigue involves not merely a diminution in the quantity of the worker's available "energy," but also a lack of harmony, a disorder of the various nervous processes which determine his performance of mental or bodily work.

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[10] Ibid., No. 26.

[11] Jour. of Nat. Inst. Ind. Psych., vol. i., pp. 132–140.

[12] Ibid., vol. i., pp. 193–197.

Middlesex Hospital Medical Society.—The annual special meeting of this society will be held at the Middlesex Hospital, London, on Tuesday, May 12th, at 8.15 for 8.30 P.M., when Lord Justice Atkin will deliver an address entitled Medicine and Law.

Health and Psychology of the Child.—A series of six lectures on this subject, addressed to matrons of day nurseries, children's nurses, teachers, and mothers, will be given under the auspices of the National Society of Day Nurseries at Carnegie House, 117, Piccadilly, London, W., on Tuesdays at 7 P.M., from May 19th to June 23rd. The lecturers are Dr. Alice Hutchison, Dr. Sloan Chesser, Dr. Kenneth Dickson, and Miss Liddiard.

THE PRACTICE OF ARTIFICIAL LIGHT-BATH TREATMENT.

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THE value of sunlight in the treatment of certain forms of tuberculosis [1] [2] and of rickets [3] is established. It is also recognised that artificial light can be utilised *to replace and supplement the sun's rays.*[4] The object of this paper is to place on record our experience with artificial light-baths during the past two and a half years in the hope that it may be of assistance to other workers in the same field. Before discussing the practical aspect we think it will be of interest to review briefly the important biological research which has been carried on *pari passu* with the clinical observations.

Historical Survey.

The Romans appreciated the benefit of the sun-bath, though it does not appear that they attributed any therapeutic properties to it. The solarium was either on the top of a flat-roofed house or a gallery above a porch, and though open all round was often covered by a roof. Here a portion of the day was spent in "slacking" in the sun.[*] The close resemblance of the Roman solarium to the sun-baths in the Higher Alps is sufficiently obvious.

The earliest reference in literature to the actual use of light in the treatment of disease is found in the well-known passage in the "Rosa Medicinæ" of John of Gaddesden (1280–1301),[5] who claimed to have cured a royal prince of small-pox by keeping him in a chamber from which all radiations but the red were excluded. This was probably based on some previous experience and may have come from the East, where such a measure is believed to have been used in the remote past. Finsen, to whom we owe so much in the scientific development of phototherapy, was of opinion that the essential factor in red light treatment (as used in variola) was the exclusion of the ultra-violet rays,[6] but some recent work with a neon lamp, which gives red rays, suggests that these radiations may themselves have a definite therapeutic effect.

Therapeutic Activity of Different Parts of Spectrum.

It has been determined that the various parts of the visible and non-visible spectrum have different therapeutic activities, and in time it is hoped to be able to state definitely what portion of the spectrum is responsible for the clinical phenomena observed. Experiment has shown :—

1. That infusoria can be immobilised by exposure to a mercury-vapour lamp, but that the time required is lengthened by simultaneous exposure to red rays (Hill and Eidinow[7]). This antagonism has also been observed by Hess in experiments on rats with combined radiations.

2. That rats fed on a diet deficient in vitamin A cease to grow normally in from seven to ten days. If rats so fed are subjected for ten minutes every second day to the radiations of a mercury-vapour lamp the growth of the animal is normal for from 35 to 50 days. After that symptoms of vitamin-A deficiency occur and xerophthalmia develops.[8]

3. The development of rickets is prevented in rats fed on a rickets-producing diet by a daily exposure for 15 minutes to a mercury-vapour lamp.[9]

4. That the bactericidal power of a rabbit's blood against staphylococcus can be greatly increased temporarily by exposing the shaved skin of the animal to the mercury-vapour lamp. This phenomenon lasts for two or three hours, but can be reproduced by further exposure to the source of light. This reaction is not restricted to epidermal cells, for an exposure of the ileo-cæcal portion of the small intestine gave rise to a similar increase in the hæmo-bactericidal power. Controls treated in like manner without irradiation gave negative results.[10] It has also been demonstrated by Colebrook that the hæmo-bactericidal power in man may be increased by light-baths, but that in some instances the exposure of the whole body to actinic rays may diminish this power.[11] This operation may explain why some cases of pulmonary tuberculosis "flare up" after sun-baths, a contingency well recognised in sanatoria. Colebrook, Hill and Eidinow find that the hæmo-bactericidal power in man does not increase unless an erythema is produced.[12] This observation suggests to us that there must be some other explanation of the benefit derived by tuberculous subjects from light-baths, for many of our patients have shown marked clinical improvement without the production of an erythema.

Pigmentation.—We find that clinically we can produce more rapid pigmentation with the carbon arc than with the mercury-vapour lamp, and in the majority of patients the pigmentation after carbon arc treatment is of a redder brown, while that of the mercury-vapour lamp is greyer. Some patients, both brunettes and blondes, do not pigment at all, and in spite of this they show clinical improvements.

5. An instrument has been designed by which the ultra-violet light may be measured. It consists essentially of a wedge-shaped glass envelope containing a standard solution of acetone methylene-blue, and the degree of bleaching has been standardised by the exposure required to kill hay infusoria.[13]

Clinical Observations.—Actinic light is used in treatment in two ways: (1) local treatment by concentrated light, particularly applicable to the form of tuberculosis of the skin known as lupus vulgaris; and (2) by subjecting the whole body to the sun's rays or to a powerful source of light rich in actinic radiations.

Local Treatment by Concentrated Light.

In his early experiments Finsen used the sun, focusing its rays through a large lens containing a blue solution on the affected area of skin. At the focus was placed a compressor formed of a ring of metal with two plates of rock crystal. The compressor was used to render the parts anæmic, it having been found by experiment that the red colouring matter of the blood prevented the passage of the actinic rays of light. The compressor was also used to cool the parts, and for this purpose a current of cold water was kept constantly circulating through it. Without this cooling the patient was unable to bear the heat produced at the focus of the sun's rays. It was soon found, however, that in Copenhagen, as in other countries in northern latitudes, the sun was too unreliable as a source of illumination, and powerful electric arcs were substituted for it. The light from these arcs was passed through a series of lenses in a telescope tube and focused on the affected area of skin. The compressor was used as in the sun treatment. By the original Finsen apparatus eight patients were treated at a time. A modification devised by Reyn for the treatment of one patient on the same principles has been found equally efficacious. Trials were made of other illuminants—e.g., a lamp with iron poles giving a highly actinic light was devised, but was eventually discarded.

Mention must, however, be made of the ingenious Kromayer lamp which is of considerable utility in certain types of case. This consists of a U-shaped envelope of rock crystal containing mercury vapour. It is enclosed in a capsule of metal with a rock-crystal window. Through the outer capsule a constant current of cold water is passed. The rays developed in the mercury vapour are highly actinic and the window is pressed firmly against the part to be treated, so that the area is rendered anæmic and can thus be penetrated by the actinic rays. In our experience the Kromayer lamp has a sphere of usefulness particularly for lesions on the body and limbs.

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[*] We are indebted to Dr. Brownrigg, headmaster of Magdalen College School, Oxford, for interesting information on this point, and a reference to a criticism in Plautus (Miles Gloriosus) to a house which had neither a garden nor a solarium.

If treatment is carried out with a careful observance of Finsen's technique, from 60 to 70 per cent. of cases of lupus vulgaris can be cured. The inflammatory reaction following the application of concentrated actinic light destroys the infecting organisms, and replaces the diseased tissue by a soft, supple, healthy cicatrix. The failures are due to (*a*) extensive disease of the mucous membranes, especially of the nasal cavity, and (*b*) a type of the disease too active for the necessarily slow treatment to keep pace with its extension.

The Light-Bath.

The sun-bath was originally introduced for the treatment of surgical tuberculosis in Switzerland by Bernhard,[11] and the clinical application has been developed by Rollier. At first it was thought that the undoubted benefit which followed the exposure of the nude body was mainly due to the high altitudes, but it is now known that the important factor is the light. In the Alps the air is clearer than in lowland countries, and there is less absorption of the actinic rays by the atmosphere. At the seaside the actinic value of the sunlight on clear days is higher than inland, but in winter in northern latitudes the chemical activity of the sun's rays, even on bright days, is low. Hence the necessity for artificial illuminants.

Lamps in common use are (1) large carbon arc-lamps with or without tungsten paste cores; and (2) mercury-vapour lamps. Tungsten arcs have also been used, but we found that these had practical disadvantages. Our remarks apply to carbon arcs with tungsten paste cores and mercury-vapour lamps.

Apparatus.

1. We do not advocate the use of any particular *source of illumination*. We have to consider expediency as well as theoretical light-values. For instance, we must modify our methods according to (*a*) the time that the patient can spare for treatment; (*b*) the pressure of numbers; (*c*) the convenient formation of manageable groups of size and age (we find it inconvenient to treat adults with children owing to the level at which the source of illumination is placed with regard to the patients); (*d*) infectivity—it is unwise to place a patient with cough or discharges in proximity to other patients; (*e*) whether the patient can come to the lamp or a portable illuminant must be used (the voltage available in the latter case is an important factor); (*f*) the standard of training of the assistants. One form of illuminant is fool-proof, while another—e.g., the mercury-vapour lamp—requires trained and informed care.

2. *Type of Illuminant.*—No consideration whatever can be given to any light which is glass-enclosed. Glass is almost impermeable to ultra-violet light.

Carbon Arc.—Small or large carbon-pencil arcs are equally valuable if the law of inverse squares is borne in mind—i.e., a small group or single patient placed before a 25-ampère lamp, or ten children or eight adults around a 75-ampère lamp would give equally good results. If carbons with a tungsten paste core are used a light of high actinic value is obtained, a light whose spectrum more closely approximates that of sunlight than with any other form of illuminant. Such lamps are mechanically dependable, owing to their long use by electrical engineers as public illuminants. The only difficulty is the regular approximation of the carbon pencils as they burn away, and this is efficiently met with in any type designed for continuous use. An arc that will burn for four hours without replacement of carbons is all that is required. The group treatment of patients around an arc lamp is attended by heat and stuffiness to an extreme degre. This can be overcome by efficient ventilation, and when this is impossible the discomfort ceases if an efficient ozonising apparatus is installed. For convenience of electrical supply two 24-ampère lamps can be used together as a unit rather than one lamp of higher ampèrage. A lamp of high ampèrage might require the installation of a motor transformer.

Mercury-vapour lamps have certain advantages. The initial cost is low, the lamps are portable, and the current required may be obtained from ordinary lighting circuits. No mechanical attention is necessary during the ordinary life of the "burner," which is approximately 1000 hours. It is fragile, replacement of the burner is expensive, large-group treatment is impracticable, and the best results have always been obtained by treating patients singly or at most in pairs. Great care is needed for the protection of the eyes of both patient and attendant, as painful conjunctivitis may follow a very short exposure. Children, particularly, require constant watching under this light, as they tend to interfere with the apparatus and approach too near to the source of light. Careful timing here is of first importance, and is to be obtained by the use of a cardboard clock-face, the hands of which can be set for the time of the termination of the dose, and by always having the patient facing a dependable clock and telling him that when his time arrives he must leave the lamp. This precaution is taken in case the nurse should by any accident be prevented from giving the necessary warning. We prefer this method of working to the installation of an automatic cut-out worked by a clock, since the frequent interruption and restarting of the lamp at intervals that may be as short as two minutes, throw an undue strain on its construction, and, furthermore, at each restarting time is lost while waiting for the incandescent vapour to acquire its full actinic value. When absolutely new the reaction is more intense than when it has been in continuous use for 24 hours, but after that, certainly up to 600 hours, its reaction has appeared to us to be remarkably constant. In an old burner the quartz becomes opaque, and longer exposures are tolerated by the patients. It is therefore important to bear this in mind when replacing an old burner. The exposures then should be re-timed as from the start.

Clinical Dosage.

Generally the initial dose, which can be borne with comfort, should give rise to no more than an evident reddening of the skin and a not unpleasant conscious tingling. Experience of initial doses over the last two and a half years has never shown any ill-effects of an exposure of half an hour to the carbon arc light or of two minutes to a 6 in. mercury-vapour burner. It is a fact that after an exposure of two minutes a patient ceased to attend the department when a doctor called in hinted at a diagnosis of scarlet fever, but the patient attended the day following and received a second "erythema dose" without distress or injury to the skin. With either of these initial doses desquamation, in the form of large dry flakes, may be widespread or may not occur at all. We have never seen blisters form, however intense the reaction within this timing, or however widespread the desquamation may have been. From our observation more severe reactions are given by the skin of brunettes, who also in turn exhibit far more intense pigmentation as time goes on. We meet with blondes whose reaction, at first acute, after many doses is often imperceptible, yet the improvement in their physical state goes on. It has been suggested that a trial dose to a limited area of skin would be of assistance in the dosage of new patients. We have not yet found any disadvantage in proceeding on the lines of gradually ascending doses from our ascertained safe initial exposure.

The stages of increase are, for administrative convenience, ascended at weekly intervals. The carbon-arc exposure is increased by half an hour at a time up to a maximum of four hours per diem. If at any time the skin is noted as being erythematous, with or without pigmentation, the dosage is not increased. In the mercury-vapour cases the initial two minutes to each side of the body is increased weekly by a minute to either side, to a maximum of 20 minutes to each side.

Intermissions due to illness, holidays, menstruation, call for watchfulness. An interval of up to four days calls for no alteration in the time of exposure. A month certainly means a resumption of the initial dosage—e.g., half an hour of the carbon arc or two minutes of the mercury vapour. An intermission of a fortnight requires a halving of the maximum then reached. Omission of this precaution has given rise to painful severe erythemata. In practice we find it unnecessary to differentiate between the children and the adult patients as regards the initial exposure. For rickety babies we have not exceeded a maximum exposure of two and a half hours to the carbon arc. The standard distance of the patient's exposed skin from the source of light is assumed in all cases to be three feet, and so far we have applied this system of dosage to all types of disease submitted, but enlarged experience may lead us to introduce modifications. We think it is an advantage to maintain the patient in a sitting, standing, or recumbent position throughout his treatment. Exposure of ambulant patients appears to offer no special advantages. Areas of skin reacting from any local treatment or in an ulcerated condition, are carefully protected by a dressing while the rest of the skin is exposed. If this is not done the patient will complain of pain and discomfort, and there is no appreciable therapeutic benefit.

Protection of the eyes in all cases is necessary when the front of the body is under treatment. Smoked glasses in practice are always discarded for brown-paper masks. For small children closely-fitting leather and elastic eye-shades are used in which are inset deep-tinted glasses.

Physiological Effects.

The physiological effects observed on patients while exposed or after exposure to the light-bath made in our clinic are as follows:—

1. The *basal metabolism* was examined in a number of patients before and after light-bath treatment by Dr. Argyll Campbell, of the National Institute for Medical Research. No change was observed in the patients examined.
2. *Blood Counts* were made in a number of patients but no material alteration was noted. In some there was a slight increase in the leucocytes.
3. *Body Weight.*—If below the normal the body-weight was found to be increased by light-bath treatment.
4. *Growth.*—In children it was found that the rate of growth increased to but not beyond the normal.
5. *Mentality.*—Improvement was noted in all cases. Dull, lethargic patients became bright, and took an interest in their condition and appearance.
6. *Temperature.*—No change was found in the body temperature during or after the sittings.
7. *Pulse.*—The pulse-rate was unchanged.
8. *Respiration.*—The rate of respiration was not altered.
9. *Blood Pressure.*—Finsen was of opinion that hyperpiesis was directly affected; in fact, his early work on light-baths was directed specially to the treatment of high blood pressure. We found no change in patients with a normal blood pressure.
10. *Thirst.*—Our patients constantly complain of thirst.

Management of a Light Treatment Clinic.

The management of these clinics presents no difficulties that need prevent their widespread multiplication, save only that of initial expense and cost of running. The Ministry of Health have power to sanction contributions towards the cost of this installation and its upkeep by local authorities, but, naturally, the Ministry would be consulted in advance. Voluntary hospitals can come to arrangements with local authorities for "per capita" or for annual grants. The local M.O.H. is, of course, a mine of information as to the best manner in which to set this machinery in operation. Light clinics may be established as part of the armamentarium of a general hospital or infirmary. They may be set up for a special type of case—e.g., lupus—or for a special clientèle, as is found in a children's clinic, or sanatorium, or other specialised institution, where it may be used as a supplement to a general scheme of sunlight therapy.

Selection of Cases.—The majority of patients needing light treatment will be unable to pay for this during the necessarily long period of its continuance. External aid is a necessity if the clinic is to work successfully. Furthermore, continuity of attendance is essential. In all these matters coöperation with the local authority is of the greatest assistance. In some instances all that is necessary is the provision of a railway season, ticket, in others a lodging allowance. The provision of hostels in connexion with clinics attached to general hospitals is now being considered. Attendance of patients can be stimulated by health visitors and by school nurses. Early cases are picked out for treatment by school medical officers, and others by tuberculosis officers and infant welfare clinics, while the majority have been and will be sent for treatment by the watchful general practitioner.

The choice of patients to be treated must be left, naturally, to the discretion of the medical man in charge of the clinic. In practice we find it impossible to take on cases, however suitable, unless and until arrangements have been made to ensure the regularity and continuity of their treatment from the outset.

Briefly, the types of case likely to benefit by light treatment in a general light clinic are: (1) tuberculosis of bones and joints, of glands, of the peritoneum, lupus vulgaris of the skin and of the mucous membranes; (2) rickets; (3) blood disorders; (4) neurasthenia; (5) some forms of chronic arthritis; (6) *B. coli pyelitis.* Experience may add to these.

Cases of pulmonary and laryngeal tuberculosis should be treated only in institutions devoted to this special work, not only on account of their contagious nature, but owing to their need of special dietary and hygienic care, and the need of expert clinical supervision. No surgical case should be admitted unless referred by a competent surgical authority. We have had sent to us cases of spinal caries still needing orthopædic support and cases of rickets that required operative or instrumental correction of deformity. Blood diseases also must be watched by a hæmatologist.

Staff.—The medical officer needs the assistance of a fully-trained nurse as the patients come at all hours of the day, and, in our own experience, have arrived with measles, chicken-pox, diphtheria, herpes zoster, encephalitis lethargica, and minor fractures.

Education.—Owing to the necessity of the daily treatment over a long period of time the need of educational care must be shouldered. Illiteracy and indiscipline are bound to occur in children lodged for long periods away from home. Owing to the keenness of the London educational authorities all our non-contagious children of school age may now attend school for half the day. But arrangements have still to be made for the education of children coming from a distance and living in approved lodgings, in the neighbourhood of the clinic.

Reports.—To secure the willing coöperation of boards of guardians it is necessary to make careful clinical reports which we find it advisable to supplement by photographs. It is obviously to the advantage of the contributing authority to be fully informed of the attendance and progress of cases for which they have assumed responsibility.

We never allow ourselves to forget that diseases must be attacked from all sides at once. Rickets calls for dietetics as well as light treatment; lupus needs local as well as general therapy; tuberculous adenitis may need tuberculin injections; surgical tuberculosis may require aspiration or operative measures.

Light therapy, then, is a new weapon in the armamentarium of medicine, but the great convenience of concentrating patients in a special clinic has the danger that other measures valuable in expert hands may be neglected. We realise daily the great advantages that we as well as our patients reap by the fact that all the laboratories and specialised services of a general hospital are immediately available.

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(*Continued at foot of next page.*)

LIGHT IN THE PREVENTION OF RICKETS.

A Paper read at the Fourth International Congress of Thalasso-Therapy, held at Arcachon, April 27th to 29th.

BY FRANCIS HOWARD HUMPHRIS, M.D. BRUX., F.R.C.P. EDIN., D.M.E. & R. CAMB.

RICKETS has been called either a calcium-deficiency disease or a vitamin-deficiency disease, and it may be that it is either or both of these; but is it not essentially a *light-deficiency disease?* And therefore does it not follow that the prevention and cure of the malady lies with *light-sufficiency?* I think that the time will come when it will be generally acknowledged that light can prevent rickets as surely as vaccination can prevent small-pox, and is as valuable a means of cure as is antitoxin in diphtheria. The procedure, if simple, involves much time and a certain amount of trouble, but as a therapeutic possibility, surely well worth while.

Rickets is one of the diseases most amenable to the ultra-violet energy, and one in which the therapeutic value of this agent has been proved beyond doubt. For over 20 years experimental and clinical proofs have been frequently recorded. Literature, which, as a rule, is scanty where ultra-violet light is concerned, is prolific where this form of therapy is employed in rickets. Thirty-four years ago Dr. Theobald Adrian Palm published his views on the relation of sunlight to rickets,[1] and from then till the present time the medical journals have been publishing facts and results of ultra-violet radiation in the treatment of this disease, so that it would seem superfluous to enter fully into the subject here, and to discuss it superficially would be unsatisfactory.

The whole case may be summed up, somewhat baldly perhaps, by two definitions: (1) Rickets is a disease or aberrancy of the bony tissues due to, or characterised by, a calcium and phosphorus deficiency as well as by a lack of the fat-soluble vitamin A. (2) Ultra-violet therapy raises the calcium and phosphorus content in the body, and also increases the energy of the fat-soluble vitamin A. If the accuracy of these two definitions be admitted, it would seem that ultra-violet radiation is valuable in the pathological conditions shown in rickets.

Light and Metabolism.

The therapeutic action of ultra-violet radiation on metabolism opens up a wide field. It is known that these rays are absorbed by the blood, but we do not know how the end-products, resulting from the changes in the blood set up by this absorption, are stored, or in what manner or form these products are set free in the tissues. But that metabolism is profoundly and beneficially affected by them is now established beyond doubt. The good effect may be due to the chemical changes in the blood which follow the administration of ultra-violet rays. One of these changes is that the calcium content becomes higher, and another is that the concentration of inorganic phosphorus is increased by its means. The phosphorus and calcium increase in the blood is probably due to absorption of these salts from the bowel. It would therefore seem to be a logical corollary that, if an additional quantity of these salts were introduced into the bowel, the greater would be the opportunity for the ultra-violet radiation to abstract it therefrom.

It is probably mainly due to these chemical effects that ultra-violet radiation is productive of such good effects in rickets. This disease has in many cases been prevented and checked by the use of ultra-violet rays. Rats kept in darkness and deprived of certain food factors, notably vitamins, will develop rickets. If some of these rats be exposed to ultra-violet radiation, the diet remaining unaltered, the development of rickets in them is checked. The calcium and phosphorus content in the blood is responsible in a great measure for the integrity of bone structure, and for the growth and calcification of the skeleton. In this connexion it is interesting to note that Huldschinsky in 1919 placed it on record that at the Oscar-Helene Home for curing crippled children at Berlin ultra-violet radiation was more effectual than sunlight and cod-liver oil. He says: "Cod-liver oil as well as sunlight were found to be exceedingly slow in their action, the exposure to ultra-violet light yielding incomparably better results."[2]

Experiments with ultra-violet light on animals will illustrate the close relationship between light and diet in the ætiology of rickets, and show how the chemical changes, effected by radiation, produce good results. When the diet remains a constant standard rickets-producing diet, rickets will either develop or not, according to the dosage of light. Thus it was found that raying for two minutes daily with the mercury-vapour lamp at a distance of three feet afforded protection. Raying for only one minute was insufficient. Four minutes sufficed when a carbon-arc lamp was used at this distance, but two minutes were not long enough. There can be little doubt but that the same reciprocal relationship between light and diet prevails in regard to infantile rickets.

Calcium and Phosphorus Concentration of Serum.

A very striking table is quoted by Hill showing the percentage of calcium and inorganic phosphorus concentration of the serum of rachitic children before and after exposure to light. The figures are in milligrammes per 100 cubic centimetres of serum.

Calcium and Inorganic Phosphorus Concentration of Serum of Rachitic Children Before and After Exposure to Sunlight.

1922.	Calcium.	Phosphorus.	Product.	—
From June 10	8·8	2·8	30	Marked rickets.
to Aug. 2	11·1	5·0	55	Definite healing.
From Aug. 8	11·0	3·0	33	Moderate rickets.
to Aug. 24	11·2	5·9	66	Healed rickets.
From Aug. 11	10·6	3·0	32	Rickets.
to Sept. 7	9·2	5·9	51	Healed rickets.
From Aug. 11	9·3	2·8	26	Active rickets.
to Sept. 7	9·8	6·1	61	Definite healing.
From Aug. 16	9·3	2·5	23	Rickets.
to Sept. 7	9·8	5·9	58	Healing.
From Aug. 18	9·8	2·5	25	Marked rickets.
to Sept. 7	9·2	6·5	60	Definite healing.
From Aug. 21	7·9	3·1	25	Rickets.
to Sept. 7	9·0	5·1	46	Healing.

Some two years after this table was presented, very interesting results were published[3] of research work undertaken by Grant and Gates of the Rockefeller Institute. These bear out Hill's figures in a remarkable manner. The experiments consisted in exposing light-coloured, or albino rabbits to ultra-violet radiation for half an hour daily at a distance of one metre. The rays caused erythema with its usual sequelæ, desquamation and moderate pigmentation. The examination of the calcium metabolism gave the following results. It was found that the average concentration in the groups having been exposed to ultra-violet radiation for five, six, and seven weeks was over 12·7 mg. per 100 c.cm.

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[1] See the Medical Press and Circular, May 28th, 1924.

[2] Oscar-Helene Home for the Treatment and Education of Infirm Children, Berlin-Dahlem. Dr. K. Huldschinsky: Heilung von Rachitis durch Kunstliche Hohensonne, Deutsch. Medizin. Wochenschrift, 1919, No. 26.

[3] THE LANCET, 1924, i., 913.

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of serum, as compared with an average of 11·9 mg. per 100 c.cm. for 60 normal control rabbits.

In another set of experiments rabbits were given increased exposures of ultra-violet radiation daily over a period of four weeks, and in these animals the blood-calcium concentration rose from 11·9 mg. per 100 c.cm. of serum before exposure to 12·2 mg. on the twelfth day, 13·5 on the twenty-second day, and 12·9 at the end of the experimental period. It was noted that the later figures in both these sets of experiments showed a somewhat lower level in the calcium content. This is probably due to the protection afforded by the skin pigmentation caused by the ultra-violet light.

Effects of Light on Endocrine Glands.

These experiments show a further point of interest which has a distinct bearing on the subject, and to which I will briefly refer. It is this. The weights of the endocrine glands and testes all increased during the treatment. These were all recorded and the changes compared with the normal controls. The parathyroids showed the greatest hypertrophy, the percentage in their increase varied from 11·1 to 51·1 per cent. This increase in weight was due to a true hyperplasia of the parenchymatous tissue. The normal relationship between the parathyroids and calcium metabolism is already established, but these experiments are important as showing the effect of ultra-violet radiation upon them both, and, as the authors say, whether the light acts primarily on the absorption and excretion of calcium, and so causes a rise of the blood calcium, which results in a hypertrophy of the parathyroid gland, or whether the radiation primarily affects the glands themselves, remains to be determined. But this determination may rest for the present. The fact of paramount importance is that ultra-violet radiation has the power to raise the calcium content in the blood, and is a reliable therapeutic measure which will cure and prevent rickets. This being established, let us touch briefly on the technique of the practical prophylaxis of rickets. The treatment should begin as soon as pregnancy is proved. In the parturient female an increased calcium content is a consummation most devoutly to be wished. There is normally a great drain upon her calcium metabolism, as is often evidenced by dental trouble, and, owing to this drain, the seeds of rickets may be sown in the child before ever it is born. Hence, both for her own welfare, and that of her unborn child, let the expectant mother have some form of light therapy regularly for the duration of her pregnancy. Apart from being an insurance premium against the production of unhealthy offspring, the mother will experience a sense of health and well-being not always obtaining among women labouring with child, but which usually accompanies the administration of general light therapy.

Furthermore treatment by light should be continued throughout the period of lactation. What better prophylactic agent against the occurrence of rickets could be desired than the maternal milk rich in calcium salts? Steenbock and Black[4] have shown that if a rat's food ration, deficient in fat-soluble vitamin, were exposed to ultra-violet rays it became "activated" and produced as good growth and calcification of bone as if the animal itself had been irradiated, hence radiation of the child's food will tend to promote bone calcification. This is, of course, the counsel of perfection, and, at the present time, not practicable for the many, but it would certainly make for the prevention of rickets.

Prophylactic Light Treatment.

Coming now to the child who has not had these advantages derived from his mother, it has been recently suggested by Mellanby that the anti-rachitic vitamins in food are increased, or made more active, by exposure to ultra-violet radiations, and that these tend to conserve ingested calcium and phosphorus for the use of the growing organism. Another measure which would do much to eradicate this widespread disease of children would be the raying of every child for a month or six weeks during the first year of his life. Two or three times a week would be all that would be needed, and this would have far-reaching effect and produce results at which one can only hazard a guess, but which I venture to think would be comparable to the effect that vaccination has had upon small-pox. Fifty years ago one met in the streets on every hand eyes blinded by this scourge, and it seems to me that I can remember that one face in every ten or a dozen was pock-marked. To-day such a thing is a rarity. But rickets, its results, and infant and child mortality, which can be traced to its malign influence, all take heavy toll, and, though the prevention of rickets by the light treatment of every child may appear extravagant at first sight, the paramount importance to the population of the prevention of rickets cannot be exaggerated. It is not only rickets as an entity which it is sought to extinguish, but, just as it is recognised that rachitic children are more liable to infectious and other diseases than the non-rickety children, so, with the prevention of rickets, the liability to many illnesses which contribute to child mortality is diminished. The prevention of rickets in the children of the nation is a national duty, and so surely as it is performed a national reward will follow in the bringing up of a population, few of whom will appear in class C3, but who will be sturdier and stronger by the elimination of a disease which for too long has weakened and depleted the peoples of many races.

REPORTS ON
TUTOCAINE: A LOCAL ANÆSTHETIC.
I.—PHARMACOLOGY.

BY E. WATSON-WILLIAMS, *M.C.*, CH.M.,
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TUTOCAINE is described as the hydrochloride of di-methyl-amino-methyl-p-aminobenzoyl-oxybutane, $C_{14}H_{22}O_2N_2.HCl$; molecular weight 286·6, alkaloid content 87·3 per cent. As the formulæ below indicate, it is related to alypine and closely to stovaine. From the latter it differs (*a*) in the placing of the benzoyl nucleus, which is attached to the *third* carbon atom from that carrying the alkyl amino group (as in butyn): (*b*) in having an amino group attached to the benzene ring in the para position, in common with several anæsthetics derived from simpler paraffins.

Tutocaine is supplied as a faintly creamy-white powder, consisting of microscopic crystals. (Tablets and ampoules are said to be available.) This is soluble in cold distilled water up to 12 per cent., and more soluble in warm. The solution is neutral and optically inactive. It has a very faint yellowish tint, which darkens slightly on keeping. It can be boiled for a *short* time without decomposition, but should not be autoclaved (tutocaine appears rather less stable than cocaine hydrochloride when heated). Care should be taken to exclude all traces of alkali, which decomposes compounds of this type; some glass is alkaline! With ordinary care the solution will keep good for several days in a stoppered vessel. It grows moulds readily, and if dispensed in a corked bottle the addition of 1 part per 5000 of salicylic acid will be found useful—so prepared, the solution seems to remain active for at least three months. The taste is bitter, without special features.

If preferred, normal saline may be used to dissolve or dilute tutocaine. Adrenalin may be added; if so, this should be done immediately before use. Tutocaine is insoluble in oils. It is not subject to the Dangerous Drugs Acts. The price has not been fixed.

Experimental Toxicity.[1]

Compared to cocaine hydrochloride, the toxicity of 1 g. of tutocaine, estimated by the subcutaneous minimal lethal dose for guinea-pigs, gives the following values:—

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[4] Jour. Biol. Chem., 1924, lxi., 405.

[1] The expenses of the experimental work described below have been defrayed by a grant from the Colston Research Fund of the University of Bristol.

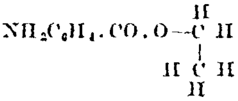
Strength of solution ..	0·25 %	0·5 %	1 %	2 %	5 %	10 %
Tutocaine	—	5·9	7·1	7·9	8·3	8·6
Cocaine hydrochloride.	11	16	20	23	25	26

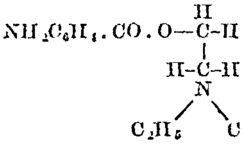
These figures indicate the weight of guinea-pigs in kilogrammes killed by 1 g. of the drug, and are the reciprocals of the minimal lethal doses in grammes per kilogramme.

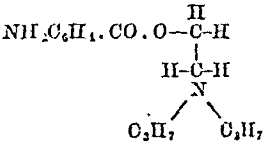
Measured by this scale, tutocaine appears about three times less toxic than cocaine hydrochloride, and rather more than twice as toxic as novocaine. With convulsions as our criterion, the same proportion as regards cocaine is observed (which is uncommon). "Excitement" seems to be produced by doses much below the fatal dose, about 1/10 of the latter in guinea-pigs; tutocaine should therefore prove very safe to use in clinical practice, as ample warning should be afforded of any tendency to exceed a safe quantity. The same property indicates that tutocaine may prove useful to the drug-taker, who might be able to get the minor toxic effects that he seeks with little risk of serious poisoning. When death occurs it is from respiratory paralysis, the heart failing after the respiration ceases. One fatal accident (urological) with tutocaine has been published (vide below). The vertigo, head retraction, excitement, pupil dilation, convulsions, &c., seen in a guinea-pig poisoned with tutocaine resemble those seen with cocaine very closely—more so than do the manifestations of any other substitute with which I have worked.

Bases of Certain Local Anæsthetics: (1) Ethanol Series; (2) Propanol Series; (3) Iso-amyl Series.

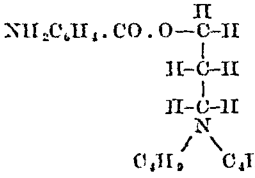
(1) *Ethanol Series.*


Anæsthesin.

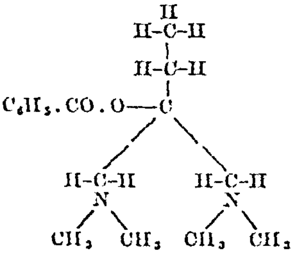

Novocaine.

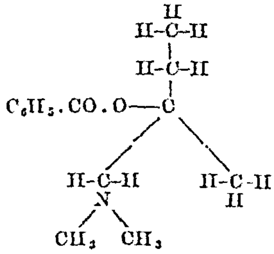

Isocaine.

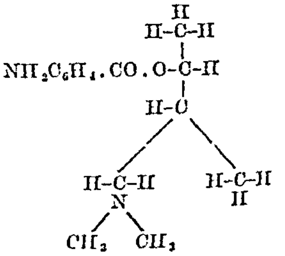
(2) *Propanol Series.*


Butyn.

(3) *a-iso-amyl Series.* (= "*Butanol*" *Series.*)


Alypine.


Stovaine (Amylocaine).


Tutocaine.

The cocaine efficiency ratio of a drug is obtained thus: The figure found for the anæsthetic efficiency, as compared with that of cocaine under similar conditions, is divided by the figure expressing the toxicity, as compared with that of cocaine. The latter is usually taken to be the toxicity deduced from the experimental minimal lethal dose, determined in suitable animals, by a method—e.g., subcutaneous injection—comparable with that employed in clinical application of the drugs. If we accept the value deduced below for the cocaine anæsthetic ratio of tutocaine—namely, 70 per cent., or 0·70 unit—and the value given above for the comparative experimental lethal toxicity (subcutaneous)—namely, one-third, or 0·33 unit—we deduce a value for the cocaine efficiency ratio of tutocaine of 0·70 divided by 0·33, or 2·1.

No laboratory investigations of the local effects of tutocaine have been made for the purposes of this report, since the clinical evidence seemed so much more valuable. The drug has been extensively employed on the continent as a substitute for novocaine by injection. Our main purpose was to test the value of tutocaine for anæsthetising mucous membranes. And so, although it has been used in a few cases for major operations, and also for limited subcutaneous anæsthesia, with great success, attention has been concentrated on the other aspect. The clinical reports given below are based on upwards of 500 observations by six clinicians working independently, in an endeavour to explore the field where cocaine is generally used in this country (including dentistry).

My thanks are due to Prof. I. Walker Hall for permission to carry out the experimental work in the pathological laboratory of Bristol University; and to Messrs. Bayer Products, Ltd., for the supply of tutocaine used.

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II.—RHINOLOGY.

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AND
E. WATSON-WILLIAMS.

TUTOCAINE has been used by us (independently) since the early summer of 1921; the following conclusions are based on over 200 observations. Of these, operations such as septal submucous resection, exploratory puncture of the antrum, removal of polypi, cauterisation, conchotomy, &c., furnished some 70.

Anæsthesia.—In nearly all the cases a 5 per cent. solution was applied by spray or tampon; a few minims sufficed for superficial work, and up to two fluid drachms have been used for more extensive operations. We have not injected the solution. In a few cases, among our earlier observations, the anæsthesia appeared less satisfactory than with 5 per cent. cocaine hydrochloride. It was found that this was due to the fact that tutocaine takes rather longer than cocaine of the same concentration to produce its full effect. For example, in a certain situation the average time for cocaine was 2 min. 5 sec., for tutocaine 2 min. 50 sec.; as we were applying for three minutes, cases occurred in which the effect of the tutocaine was incomplete. Since this has been recognised and allowance made, there has been no case in which good anæsthesia failed. Nine operations were performed on subjects of "neurasthenia" selected as unfavourable patients, with complete success. From a consideration of the various findings, including the time factor, we came to the conclusion that a 5 per cent. solution of tutocaine gave the same results as a 3·5 per cent. solution of cocaine—that, in fact, weight for weight, the anæsthetic efficiency of tutocaine was 70 per cent. that of cocaine hydrochloride when applied to the nasal mucosa. The duration of anæsthesia (with adrenalin) was about 45 minutes in a few cases in which it was tested. Some observations were made with 10 per cent. tutocaine; the results agreed with our previous findings.

Shrinkage.—Special attention was directed to this point. We have come to the conclusion that tutocaine does possess some power of producing shrinkage in the nose. As compared with that of cocaine, it was considerably less (in most cases) and took longer to develop; even when complete, a further shrinkage can be produced by cocaine. Also, there seemed no effect in arresting hæmorrhage; for operative work the addition of adrenalin (1/10,000) was necessary, and perfectly satisfactory. It seems probable that two factors are concerned in regulating the width of the nasal passages: (*a*) the vascular engorgement or otherwise of the nasal mucous membrane; (*b*) the expansion or contraction of the erectile tissue of the turbinals. (*a*) Does not seem to be affected by tutocaine; a slight initial pallor occurs but is transient—the same can be produced by a spray of cold normal saline. (*b*) Seems to be definitely influenced by tutocaine, though more slowly than it is by cocaine. Those cases show most "shrinkage" in which the turbinals are most swollen.

Irritation.—No cases of primary irritation were seen. In a few of the rare cases where cocaine solution produces late irritation, tutocaine did not act in this way. One patient showed the difference especially well, and greatly preferred tutocaine.

Dr. Z., a colleague, aged 70, who required periodical inflation of the ears by Eustachian catheter. He always found that for 24 hours after the use of cocaine his nose ran to an extent sufficient to cause him great inconvenience. After tutocaine this did not occur (several observations).

Toxicity.—No case showed either local or general signs of any toxic effect. In three cases, selected because cocaine had previously caused disturbance, tutocaine did not do so.

CASE 102.—Female, 28. Had had nasal polypi removed three times under cocaine anæsthesia and had fainted after each operation. A polypus was removed under tutocaine without any disturbance; she was considerably surprised, for not knowing that cocaine had not been used she was expecting to faint this time too.

III.—OPHTHALMOLOGY.

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AND
G. C. DIXON, F.R.C.S. EDIN.,
RESIDENT MEDICAL OFFICER, BRISTOL EYE HOSPITAL.

WE have used tutocaine in about 100 cases. Fresh solution is advisable, the addition of salicylic acid proving too irritating.

Anæsthesia.—For superficial work a 1 per cent. solution proved satisfactory. Onset of anæsthesia is somewhat later than with 2 per cent. cocaine (our usual preparation), but the degree of anæsthesia ultimately obtained is the same. For deep anæsthesia a 5 per cent. solution was used; this appeared to produce an effect almost exactly the same as that given by 4 per cent. cocaine. The loss of sensation was in every case good, and the duration of anæsthesia was always sufficient for our purpose; but no special tests were employed to determine the latter.

Irritation.—The weaker solution (without preservative) is quite unirritating. The stronger is perhaps slightly irritating, but very little more than cocaine. No case of late irritation or damage to the epithelium was observed. On application there is definite injection of the conjunctiva; the addition of weak adrenalin controls this. Some drying of the cornea tends to occur, but this is less than that found with cocaine.

Pupil Changes.—The pupil is dilated by tutocaine. This occurs much more slowly than with cocaine, and is of less extent.

Toxicity.—No evidence was obtained of any toxic effect.

IV.—UROLOGY.

BY S. HARDY KINGSTON, M.B.,
CH.B. BRISTOL, D.P.H.,
DERMATOLOGIST, BRISTOL ROYAL INFIRMARY.

TUTOCAINE has been used for the anæsthetising of the urethra in upwards of 50 cases of chronic gonorrhœa, &c. A 1 per cent. solution, without adrenalin, was found suitable, and of this 10–20 minims were used for each examination.

Anæsthesia.—This came on within three minutes, and lasted on the average 15 minutes. It was in every case quite satisfactory. For diagnostic purposes it allowed clear view of such things as congested patches, ecchymoses, or submucous infiltrations of the mucous membrane. For therapeutic purposes the anæsthesia allowed treatment of the lesions with astonishing precision and efficiency, and was most useful in the therapy of chronic urethritis. Those patients who had previously been treated under novocaine (2 per cent.) assured me of their marked preference for the complete anæsthesia produced by tutocaine. In no case did this fail.

Irritation.—No case of primary or late irritation occurred.

Ischæmia.—Neither ischæmia nor injection was observed. The solution was used without adrenalin.

Toxicity.—No evidence was obtained of any toxic effect.

One fatal accident with tutocaine used for urethral anæsthesia has been published (O. A. Schwarz). A man of 20, apparently physically strong, but somewhat puffy, and psychically not quite normal, complained of asthma and kidney pains. For the purpose of cystoscopy, 8 c.cm. of 2 per cent. tutocaine was applied to the urethra without adrenalin. Ten minutes later a violent fit occurred, with pupil dilation, and biting of tongue. Then complete relaxation and "sleep." After a further 15 minutes another fit occurred. Again ten minutes unconsciousness, then clonic convulsions, respiratory embarrassment, cyanosis. Death occurred after 40 minutes from the application. Treatment had consisted in a caffein injection at the onset of symptoms. Autopsy: Status lymphaticus, thymus weighing 20 g. Death was undoubtedly due to poisoning. Schwarz considers that owing to the status lymphaticus, a dose which had always been harmless in others proved fatal in this case.

V.—DENTAL SURGERY.

BY L. E. CLAREMONT, M.R.C.S., L.R.C.P., L.D.S.,
SENIOR DENTAL SURGEON, BRISTOL GENERAL HOSPITAL, ETC.

FOR dental anæsthesia I have been using tutocaine in 0·5 per cent. solution without adrenalin. Up to 1·5 c.cm. of this has been employed at one time, the usual injection for a single tooth not exceeding 1 c.cm. Anæsthesia comes on within a few seconds; but for deep anæsthesia one must allow an interval of two minutes for the maxillary teeth, and five for the mandibular. The duration of anæsthesia is 20 minutes when the drug is used thus. In every case complete anæsthesia was obtained.

Side Effects.—No irritation or pain is caused on injection. In one case only was there some after-pain; this was in a case with exostosis of the roots, and it seems probable that the necessary forcible manipulation of the forceps might explain the late pain. No case occurred in which healing was delayed, or in which excessive bleeding was seen. No case showed any toxic symptoms. The results so far obtained are very encouraging.

A NEW OUTFIT FOR OXYGEN ADMINISTRATION.

BY H. WHITRIDGE DAVIES, M.B., B.S. ADELAIDE,

AND

A. RAE GILCHRIST, M.B., CH.B. EDIN.

(From the Department of Therapeutics, University of Edinburgh.)

EVER since its discovery by Lavoisier and by Priestley oxygen has been used for therapeutic purposes. The results, however, have been so disappointing that many clinicians have been disposed to dispense with it as useless. During and since the war, owing to intensive study of anoxæmia in aviators and in gassed men, and to the introduction of efficient methods for oxygen administration, most of the older misconceptions have been swept away and the gas has attained an assured place as a valuable and life-saving therapeutic agent. In this connexion the greatest credit is due to J. S. Haldane.

Indications for Oxygen.

Prompt and efficient oxygen administration is urgently demanded in all cases where the arterial blood leaving the lungs is deficient in oxygen saturation. This occurs in conditions where there is a lowered oxygen percentage or pressure in the inspired air and where, through bronchial obstruction or pulmonary lesions, the gaseous exchanges in the lungs are impaired. The most frequent pulmonary causes of anoxæmia are pneumonia and pulmonary œdema, and in the former it has been amply demonstrated by Meakins[1] that by efficient oxygen therapy it is possible to restore the arterial oxygen saturation to a normal level. Where the tissues lack oxygen owing to circulatory impairment the benefits from oxygen administration are less marked.

Apparatus for Administration.

Considerable need still exists for a simple, cheap, but efficient outfit for oxygen administration. The "tube-and-funnel" method as generally used is absolutely useless. Unless the funnel touches nose and chin and the gas is delivered at a very fast rate (not less than six litres per minute) little or no benefit can possibly be derived. The nasal tube method as described by Bourne[2] is little better except in infants. In both of these methods all the oxygen passing during the expiratory phase of respiration is entirely wasted.

The Haldane apparatus[3] gives excellent results in all but the severest degrees of oxygen-want. It gives an intermittent flow of oxygen, the gas being conserved during expiration, and for rates of oxygen flow of not more than half the subject's respiratory minute volume no better apparatus could be devised.

Our own outfit is essentially a modification of the Haldane apparatus. We have added to the latter a flow meter and a different type of valve, which provides in addition a means of moistening and warming the oxygen and of observing the flow of the gas. To the mask we have added an expiratory valve and an orifice of variable size for the admission of extra air. As an alternative to the mask we have introduced a forked nasal tube which can be used without loss of efficiency when the flow of oxygen is not more than a third of the respiratory minute volume. The general arrangement of the apparatus is shown diagrammatically in the figure. It consists of three parts: (1) cylinder and cylinder head attachment; (2) box containing flow meter, bag, and valve; (3) mask, and as an alternative a nasal tube.

The cylinder (A) may be of any suitable size, and the cylinder head attachment consists of a pressure gauge (B), a reducing valve (C), and a flow regulator (D). Oxygen is led through the flexible tube (E) to a box which can be hung on the back of the patient's bed. This box contains a flow meter (F), which indicates the rate of oxygen flow in litres per minute. From the flow meter oxygen passes to a bag (G) of about six litres capacity. During inspiration oxygen is drawn from the bag along the tube (H) through the wash bottle (I), which also acts as a valve. The bottle stands in an outer glass vessel (J), which can be filled with hot water. The box also contains compartments for storing the mask, nasal tubes, and cylinder head attachment. The tubes leading the oxygen from the bag (G) are of wide bore (½ inch) in order to allow of a free flow of oxygen. From (I) the oxygen passes along the tube (K) to a mask (L) or nasal tube (O). The mask is fitted with the usual pneumatic face-pad, and is attached by means of a broad band of elastic webbing. On the front of the mask are placed an expiratory valve (N) and an extra air orifice (M), which may be closed completely or opened to any desired extent. The forked nasal tube has two prongs, one of which is inserted into each nostril. It is held in position by an elastic forehead band. This has been devised as a useful alternative to the mask for patients in whom there is no nasal obstruction or who are unable to tolerate a mask. Where continuous oxygen therapy is indicated it affords a welcome change, for after an hour or so a mask may become somewhat annoying to the patient.

Method of Use.

The apparatus is used as follows. The cylinder head valve is freely opened and the regulating valve (D) so adjusted as to give an oxygen flow of 10 to 12 litres per minute. The extra air orifice (M) on the mask is completely closed, and when the bag (G) is moderately well filled the mask is applied to the patient's face. The patient is now breathing pure oxygen, and the rate of flow should be so adapted as exactly to equal his respiratory minute volume. This is done by observing the bag and the wash bottle. If the bag tends to empty itself completely the oxygen flow should be increased. If, on the other hand, the bag tends to overfill, and the bubbling through the valve to become continuous, the flow should be diminished. After a little adjustment a mean is attained in which the bag neither over-fills nor completely empties, and the oxygen bubbles through only during inspiration. A reading of the flow meter at this point gives approximately the patient's *minute volume of respiration* which should be carefully noted. When this has been done the flow of oxygen is cut down to the amount slightly more than that sufficient to keep cyanosis in abeyance, the extra air orifice being opened to a sufficient degree. If the extra air orifice is too widely opened the oxygen will tend to accumulate in the bag until it over-fills, and the oxygen will then pass in a slow and almost continuous stream. If insufficient extra air be allowed the bag will be sucked empty and the subject will then have to make an appreciable effort in order to obtain enough room air to complete each inspiratory act. The apparatus thus enables the physician to determine approximately the patient's respiratory minute volume and to adapt the oxygen flow to it. From the ratio between the two it is possible to calculate approximately the oxygen percentage in the alveolar air provided that no oxygen bubbles through the water valve during expiration, and that no leakage is present between the mask and the patient's face. Thus when the oxygen flow is equal to or greater than the respiratory minute volume and no extra air is admitted, the patient will be breathing pure oxygen, and the percentage of the gas in the alveolar air is approximately 94. When the oxygen flow is 2/3 of the respiratory minute volume the alveolar oxygen percentage is approximately 67. A ratio 1 : 2 gives 54 per cent. of oxygen in the alveolar air, 1 : 3 gives 41 per cent., and 1 : 4 gives 34 per cent. The alveolar oxygen percentage necessary to abolish the symptoms of anoxæmia affords an approximate quantitative index of the severity and extent of the pulmonary lesion.

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[1] Meakins: Jour. of Path. and Bact., 1921, xxiv., 79.

[2] Bourne: THE LANCET, 1922, ii., 23.

[3] Haldane: Respiration, New Haven, 1922, p. 152.

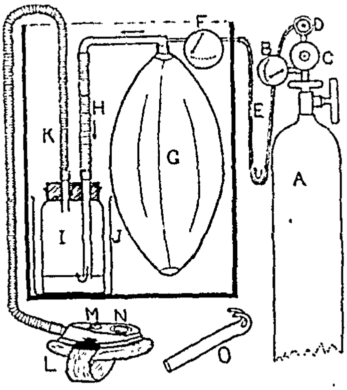

Diagram to show general arrangement of apparatus. (An explanation of the letters is given in the text.)

We have made careful comparisons of the different methods of oxygen administration, and have found that the above method shows a high degree of efficiency at all ratios of oxygen flow to respiratory minute volume. We have found that the tube and funnel and nasal catheter methods are of little value and extremely wasteful. The Haldane method is highly efficient at low rates of oxygen flow, but wastes oxygen when the flow is more than half the respiratory minute volume. A full account of all this work is published elsewhere.[4] The apparatus described above is made by Messrs. Siebe Gorman and Co., Ltd., 187, Westminster Bridge-road, London. If so desired the tube (E) can be led to the box from a suitable liquid oxygen vaporiser instead of from the cylinder as depicted in our diagram.

Conclusion.

In conclusion we would plead for the more extensive use of oxygen in an *efficient and quantitative manner*, particularly in pneumonia and especially in the early stages of the disease. If anoxæmia be left unrelieved for more than a very few hours the results of oxygen therapy are frequently disappointing. Cyanosis should be forestalled, or at any rate abolished, by oxygen administration as soon as it becomes apparent. We have considerable clinical evidence that if this were done the mortality from pneumonia could be reduced, the severity of the symptoms markedly lessened, and a speedier termination of the infectious process assured.

We wish to express our indebtedness to Prof. Murray Lyon for his helpful criticism and advice in connexion with the preparation of this paper.

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[4] Davies and Gilchrist: Edin. Med. Jour., May, 1925.

Clinical and Laboratory Notes.

TWO CASES OF DIPHTHERIA WITH UNCOMMON COMPLICATIONS.

BY J. TODESCO, M.D. FLORENCE, M.R.C.S., D.P.H. LOND.,
RESIDENT MEDICAL SUPERINTENDENT, CROYDON BOROUGH HOSPITAL.

IN the following two fatal cases of diphtheria the unusual nature of the complications renders them worthy of record.

CASE 1.—*A woman, aged 50, unmarried, was admitted* to hospital on Feb. 3rd, 1924, suffering from acute diphtheria affecting the nose and throat. She had been ill for two days. There was extensive ulceration of the throat, with sloughing membrane extending into the mouth, profuse purulent rhinorrhœa, the glands of the neck were exceedingly large and tender, with some difficulty of swallowing, and signs of acute bronchitis with much expectoration. The heart's action was regular with weak sounds. Temp. 101° F., pulse 120. Swabs from nose and throat showed many diphtheria bacilli. The throat conditions did not clear up readily, and the glands remained enlarged. On Feb. 13th the voice became nasal, the left side of palate was paralysed, with a perforation of palate on one side. There was some regurgitation of fluids, and, owing to increasing difficulty of swallowing, all feeding by mouth was stopped.

On March 10th patient vomited greenish fluid after a nasal feed. There appeared to be much post-nasal secretion, excessive salivation, and difficulty of expectoration, the palatal paralysis persisting. On the 14th the tongue, when protruded, was deflected to the left side, whilst the lower lip was drawn over to the right, her speech being very indistinct. On testing the lower limbs, the reflexes were absent, but there were no sensory or motor changes. Four days later the patient suddenly became very cyanosed and dyspnœic and vomited greenish fluid several times. Her pulse-rate increased rapidly to 160; it was small and weak; the temperature 100·2°. Signs of acute bronchitis were more marked, and she could not expectorate, though there was much secretion and excessive salivation. The paralysis of facial, twelfth, and vagus on left side was still apparent. From this time on her condition became worse. She appeared very distressed, and the pulse remained persistently weak and rapid. Death occurred suddenly on March 21st.

CASE 2.—A girl, aged 16, was admitted to hospital on Dec. 4th, 1924, with a history of sore-throat and shivering which had started six days previously. On examination she was flushed, had a "bull neck," and marked œdema of both upper and lower eyelids, so that the eyes could not be opened, and profuse semi-purulent discharge from both. The face was generally swollen, as well as the upper lip. There was profuse blood-stained rhinorrhœa with incrustation of nostrils which were blocked with membrane. Throat examination proved difficult, as the mouth could not be easily opened. The fauces were very swollen and congested, with œdema of the posterior part of tongue and marked ulceration of palate. Sloughing membrane covered the whole of the pharynx and extended forward into the buccal cavity. On Dec. 15th the œdema of eyelids was less marked so that the eyes could be opened slightly; the discharge was more watery and straw-coloured. Both pupils were equal, reacting to light, and vision was normal. A culture taken on admission from throat, nose, and eyes was positive for diphtheria in each case. On the following day the œdema of eyelids had practically disappeared, the discharge ceased, but there was marked ecchymosis affecting eyelids, and extending down to malar bones and over the bridge of nose and forehead. Patient now showed signs of heart failure, and was cyanosed and restless at times. She felt cold and clammy, the heart's action being weak and irregular. She died suddenly on Dec. 17th. The temperature throughout ranged between 99° and 101° and towards the end many petechial spots were apparent on chest, neck, and limbs.

Commentary.

These two cases are interesting owing to the uncommon nature of their complications. As regards the first, paralysis of the hypoglossal nerve is extremely rare in diphtheria. It came on five weeks after the onset of disease, whilst the palatal paralysis started on the thirteenth day. The facial palsy was incomplete, apparently only affecting the mouth. As regards the second case, the eye condition was probably an instance of the interstitial form of conjunctivitis described by the late Dr. Claude Ker, in which, in addition to much œdema of the lids, there is profuse straw-coloured discharge. It is remarkable that in spite of the acute nature of the condition the corneæ were clear and vision was normal. Lastly, it is interesting to note that the eye swab culture gave a positive virulence test, proving that the eye condition was due to a virulent diphtheria organism and not a diphtheroid.

I am indebted to Dr. H. P. Newsholme, medical officer of health for Croydon, for permission to publish these cases.

A CASE OF TRUE DEXTROCARDIA.

BY NORMAN B. CAPON, M.D.LIVERP., M.R.C.P.LOND.,
HON. ASSISTANT PHYSICIAN, ROYAL SOUTHERN HOSPITAL, LIVERPOOL;
AND
E. NOBLE CHAMBERLAIN, M.D. LIVERP., M.R.C.P. LOND.,
HON. MEDICAL OFFICER, CARDIOGRAPHIC DEPARTMENT OF THE HOSPITAL.

INSTANCES of dextrocardia without transposition of other viscera are so rare as to warrant the publication of the following case.

The patient, a female child, aged 26 months, was admitted to the Royal Southern Hospital on Nov. 15th, 1923. She had recently been treated for broncho-pneumonia following whooping-cough.

On admission she was found to be seriously emaciated; temperature 102° F., pulse and respirations 118 and 54 respectively. The base of the left lung was very dull to percussion; inspiratory crepitations were audible over the same area, and the heart was displaced to the right. The left pleural cavity was explored with a needle on the day of admission, and again two days later. On neither occasion was fluid withdrawn. The temperature followed an irregular, intermittent course.

On the fourth day after admission the apex of the left upper lobe was also found to be dull to percussion; vocal resonance was increased and the breath sounds were bronchial in character. Over the right lung the percussion note was hyper-resonant.

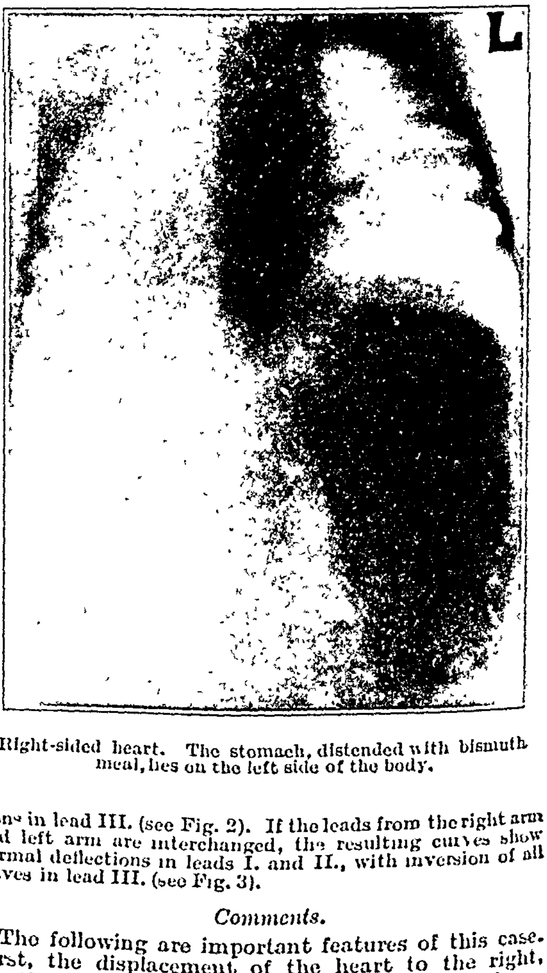
Gradual improvement, with resolution of the pneumonic zones, took place. Finally, only a chronic bronchitis of moderate degree remained, but the heart did not return from its abnormal position.

The child was sent away for convalescence to the Heswall Branch of the Royal Liverpool Children's Hospital, where she improved greatly under the care of Dr. C. J. Macalister. Later she was readmitted to the Royal Southern Hospital for further observation.

Her present condition is as follows: The patient is well-nourished and is rapidly developing, though she is still backward for her age. The lungs show no abnormal physical signs except those of residual chronic bronchitis. The apex-beat of the heart can be felt to the right of the mid-line, and the deep cardiac dullness extends 2¼ inches from the midsternal line in the fifth intercostal space of the right side. The cardiac rhythm is normal, and the heart sounds almost equal in duration and intensity; they are loudest at the apex-beat, where a short systolic bruit is audible from time to time. This murmur does not resemble a bruit due to congenital cardiac malformation. The systolic blood pressure is 70 mm. Hg. The liver is palpable on the right side of the abdomen. There are no physical signs of any deformities other than those stated above. Radiographic examination (see Fig. 1) confirms the dextrocardia and reveals a normally placed stomach and liver. There is no X ray evidence of delayed ossification of the bones of the hands.

Using the customary leads, the electrocardiogram shows inversion of P.R.T. in leads I. and II., with normal deflections in lead III. (see Fig. 2). If the leads from the right arm and left arm are interchanged, the resulting curves show normal deflections in leads I. and II., with inversion of all waves in lead III. (see Fig. 3).

FIG. 1.



Right-sided heart. The stomach, distended with bismuth meal, lies on the left side of the body.

Comments.

The following are important features of this case. First, the displacement of the heart to the right, together with signs of pneumonia in the left lung, pointed very suggestively, though wrongly, to the presence of fluid in the left pleural cavity. Second, the patient is an example of the very rare condition of true dextrocardia without transposition of the abdominal viscera. We can find only two cases published with electrocardiographic evidence—namely, those of Moffett and Neuhof,[1] and of Meyer.[2] Third, there is difficulty in explaining the inversion of P.R.T. in lead II. Willius[3] records a similar finding in a case of dextrocardia, and attributes the inversion in lead II. to "an exaggeration of the inclination of the cardiac axis to the right."

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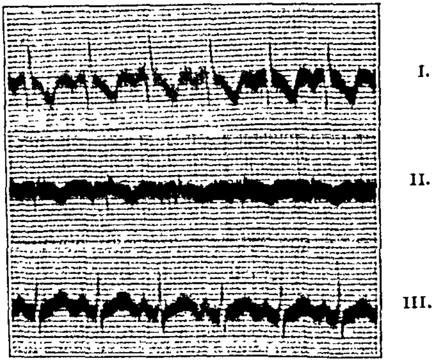
[1] Moffett, R. D., and Neuhof, S.: Amer. Jour. Dis. Child., 1915, x., 1.

[2] Meyer, P.: Archives des Maladies du Cœur, 1923, xvi., 243.

[3] Willius, Fredrick A.: Clinical Electrocardiography, Philadelphia and London, 1922, p. 142.

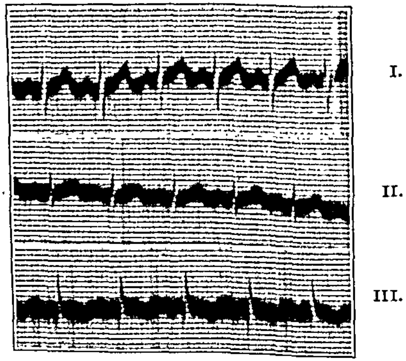
Sir Thomas Lewis has very kindly examined our electrocardiograms, and considers that the inversion of all waves in lead I. is due to true dextrocardia, but that the inversions in lead II. are due to bizarre deflections which are so often found in lead III. of apparently normal subjects; for, as he has pointed out,[4] lead II. of an individual with dextrocardia corresponds with lead III. of a normal person.

FIG. 2.



Inversion of all waves in leads I. and II.

FIG. 3.



Electrocardiogram taken with the right arm and left arm leads reversed. Inversion of P.R.T. in lead III. only.

In conclusion, we wish to thank Prof. John Hay for examining this patient with us, and for giving us the benefit of his valuable advice, and Dr. J. H. Mather for the radiographs.

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[4] Lewis, Sir Thomas: Clinical Electrocardiography, London, 1924, p. 115.

Medical Societies.

BRITISH CONGRESS OF OBSTETRICS AND GYNÆCOLOGY.

PUERPERAL SEPSIS.

ON April 22nd and the two following days the Congress held a session at the rooms of the Royal Society of Medicine, under the presidency of Dr. H. RUSSELL ANDREWS. On the morning of Wednesday reports on the prognosis and treatment of puerperal sepsis, by a committee of the Section of the Royal Society of Medicine and by a committee of the North of England Obstetrical and Gynæcological Society, were submitted. Sir EWEN MACLEAN read a paper on puerperal sepsis in Wales, Dr. G. FITZGIBBON and Dr. J. W. BIGGER submitted one on a clinical and bacteriological investigation of puerperal fever, and Dr. L. P. LOCKHART spoke on bacteriological examinations during pregnancy. Sir Ewen Maclean's elaborate paper showed that Wales had a consistently high maternal mortality rate, higher than the combined figures for England and Wales. For England and Wales as a whole the death-rate from sepsis was lowest in rural districts and became higher as the urbanisation of the population increased. On the other hand, the "other causes" of death showed the opposite tendency—i.e., lowest in the urban districts. There was agreement as to the need in Wales of a larger supply of qualified midwives, more equably distributed.

The general discussion on the subject in the afternoon was opened by Prof. J. WHITRIDGE WILLIAMS, of Baltimore University, U.S.A. The chair was occupied by Dr. J. E. GEMMELL.

Prof. Williams said that as the London report showed a mortality of 35·8 per cent. in these cases, and the North of England report gave 76 per cent. mortality, it was clear that the latter included much more serious cases than the former. Adding the cases together they showed that 403 cases were treated, with a net mortality of 48 per cent.—i.e., one patient in every two with the condition died from it, a reasonably good result if they were all frank cases of the disease. Both reports brought out the facts that women who had been subjected to much manipulation and women who had had hæmorrhage were much more liable to infection than were others, though a certain number on whom there had not been manipulation died nevertheless. That it was a contact infection everyone now believed, and it would be a misfortune if that view were abandoned. A rapid pulse meant an ominous prognosis, and the higher and the more prolonged the temperature the more serious was the outlook. It was necessary to realise that there were two types of cases: one which would get well if left alone, another which would die whatever might be done. Both reports showed a mortality of some 80 per cent. in women who had been subjected to intra-uterine manipulations. He had taught for a long time that the worst thing that could be done was to interfere with the interior of an infected woman's uterus.

There was a marked difference in the two reports in the matter of the results following the use of anti-streptococcic serum. The London Committee stated that 33 cases were so treated with a mortality of 18 per cent., and in the North of England 104 cases, showing a mortality of 72 per cent. When one encountered a severe case of puerperal infection, anti-streptococcus serum seemed to be of no avail. Therefore all that could be done was to try to find some means of combating it. Two-thirds of patients with the thrombo-phlebitic form of pyæmia would die if left alone, and if operated upon they would probably all die. The less severe cases which did not come into these categories would recover if left alone, because the outcome depended on the degree of resistance of the patient and on the virulence of the causative bacteria. Vigorous measures applied to these milder forms might convert a condition which was likely to be recovered from into one which might be fatal. There was need of research, not purely obstetrical, but along the general lines of bacteriotoxic methods.

Dealing with the communication of Dr. FitzGibbon and Dr. Bigger, in which they said they found streptococci in the vagina of two out of every three pregnant women, and in half the cases of puerperal conditions, and that the non-hæmolytic form was probably endogenous in origin, he said he did not think any technique employing a speculum for obtaining vaginal secretions was above suspicion. In ordinary women he did not think there were streptococci of any kind in these regions. Except in the cases of the gonococcus and certain saprophytic organisms, he thought it was a misfortune to talk about endogenous infection. To the end of December, 1921, out of 3000 consecutive admissions in his clinic there were 436 cases of rise of temperature in which it was necessary to consider the possibility of intra-uterine infection; 353 of them were puerperal infections—i.e., 11·7 per cent. Cultures were taken with the following results: *Streptococcus hæmolyticus* 32, non-hæmolytic 34, colon bacillus 13, gonococcus 23, staphylococcus 7, saprophytes 96, while 23 were sterile. This series did not include women who were brought after infection had occurred. In the series there were three deaths, and two of the women who died were brought after infection had occurred and were in labour; hence the responsibility for their death did not fall on the clinic. But one woman died who had hæmolytic streptococcus, whose vagina had not been examined, who had a spontaneous labour, and no perineal tear. In many of the cases which some would regard as endogenous in origin the women examined themselves, doubtless with dirty hands, and in some there was a history that there had been coitus during labour.

Prof. **Blair Bell** said that cases having a sudden onset of septicæmia and very little local resistance practically all died. But he did not agree with Prof. Whitridge Williams's passive attitude in these serious cases, as he, the speaker, thought there was a chance, chiefly with the aid of surgery, of saving their lives. Recently, in a patient who had general streptococcal peritonitis due to the hæmolyticus, also bronchopneumonia, all the treatment adopted was to drain the fluid from the abdominal cavity and treat her in the open air, and she recovered. It was only by starting investigations at the very beginning that light could be gained, especially in the prevention of the condition under discussion. Thousands of cases should be examined bacteriologically and their histories followed up. It had always been his view that coitus shortly before full time was a likely means of introducing streptococci into the vagina. Twenty per cent. of the cases in which this history was given showed the *Strept. hæmolyticus*. Digital examination before patients were admitted acted in a similar way.

Mr. **Victor Bonney** argued that quite a large number of these cases were due to an endogenous cause—i.e., were auto-genetic. Despite the increasing attention paid to sources of outside infection and the assiduity of the teaching there had been very little fall in puerperal morbidity due to sepsis. It was at least significant that in 200 cases in one report the origin of the sepsis was not stated; he would have liked to see the compilers show a little more boldness and attribute them to intrinsic sepsis. At Chelsea Hospital, in 1900, the mortality for major abdominal operations was 5 to 6 per cent. In 1906 it had fallen to 1·6 per cent., and had since remained at about the same figure. The improvement synchronised with the use of gloves at operations; nothing else was changed; the personnel of the staff and the technique remained the same. Obviously those measures would not operate against intrinsic infection. Streptococcal vaginitis he considered to be very common, and in women in whom that was established it was a source of real danger.

Prof. **H. Briggs** said it was necessary to know what temperature constituted the onset of this condition. If the pyrexial period was taken as 24 hours after labour, was not the opportunity lost of producing a number of premature labours among these women? He thought the outcome of the discussion was that until in London there was a clinical equipment similar to that of the Rotunda in Dublin, with a 1·1 per 1000 mortality in septicæmia, there would not be any very great improvement.

Prof. **Beckwith Whitehouse** said he had learned two points of importance from the discussion: that puerperal sepsis depended largely upon two factors. The first was the amount of damage which had been done to the tissues; the second, the amount of hæmorrhage which had already occurred. Damage invited infection, hæmorrhage lowered the patient's resistance. Fifty of his cases were examined bacteriologically, and in only five of them were hæmolytic streptococci found in the cervix, and the patients went through a normal labour and puerperium. In only 12 of 500 cases did the temperature rise to conform to the standard laid down by the British Medical Association, and those 12 included a certain number of forceps deliveries. He asked whether it would not be possible, in the interests of the nation, to ensure that every woman should be examined at least in the eighth month of her pregnancy and have the combined attention of doctor and midwife. The latter could not be expected always to recognise abnormalities when they were present. He agreed with what had been said as to coitus as a factor in puerperal sepsis, and mentioned a case in which a husband admitted coitus within a fortnight of his wife's delivery.

Dr. **F. J. McCann** preferred the term puerperal genital infection, comparable to ordinary wound infection in general surgery. The main hope in treatment was antenatal care, for the subject was closely related to the housing question, as women could not be expected to give birth to a child in dirty and inadequate surroundings without becoming infected. Notification had proved a failure, and if it was to continue provision must be made for the sufferers in hospital. It was a blot that these women were admitted into fever hospitals. A badly infected case should never be left; the gynæcologist should stick to it to the last. In intense and foul toxæmia he found starvation of great value; it brought about a localisation of the pus, so that it could be drained away.

Dr. **B. Dawson** (South Australia) said that Australia showed a higher mortality from causes associated with parturition than that of Great Britain; in 1922 the figure for the colony was 4·7 per 1000, as against Britain's 3·81. The death-rate from septic conditions was practically the same in both countries. In Australia there was nothing corresponding with Britain's Central Midwives Board, and only during the last two years had registration of nurses been operative. Women living in outlying farms under pioneer conditions had to endure, in childbirth, more than could well be imagined. In Australia there was a growing demand among the public for supervision during pregnancy. He made a plea, by request of his colleagues, for an Imperial, possibly an international, system whereby cases might be recorded on a uniform sheet, a standard means of case record. He also suggested that the bacteriological technique should be standardised, and that in certain well-defined clinical conditions the treatment should be uniform and should be revised and so controlled at periodic dates.

Dr. **Remington Hobbs** said that a uterus in a state of sepsis was a contra-indication for exploration of its cavity. But it should be exposed to view in every case, and any products seen should be twisted off. Speaking of a series of 7000 cases of septic uterus, he said exploration was done only when there was severe hæmorrhage. He had frequently known a rise of temperature follow curetting and swabbing out with strong antiseptics, and after quite hot intra-uterine irrigation. He had found that glycerine produced osmosis of the tissues, drained the cavity as well as the cervical canal, and greatly assisted involution of the uterus. It should be recognised that in this condition the uterus needed many treatments. If the uterus were drained the need would not arise to remove so many Fallopian tubes.

Colonel L. W. **HARRISON** reminded the Congress that Dr. T. H. C. Stevenson had pointed out the high incidence of puerperal mortality about nine months after the peak of the demobilisation curve. Dr. Stevenson asked the speaker whether there was likely to be any connexion between that fact and venereal infection. He suggested that the reason might be that large numbers of men infected their wives with gonorrhœa when they were demobilised, and that this disease was succeeded by a mixed infection of streptococci and staphylococci. He was sure many cases of so-called chronic gonorrhœa were those from which the gonococcus had long since disappeared and had been replaced by other micro-organisms, which would not have gained a footing but for the soil having been prepared for them by the gonococcal infection. Colonel Harrison gave reasons for believing that ophthalmia neonatorum was more likely to occur in the offspring if the infection of the woman occurred somewhat late in her gestation; whereas if she were infected early in the pregnancy, puerperal fever was the more likely sequel. As gonorrhœa was a mild disease in women compared with that in men, it was a good deal neglected in the former.

Dr. W. P. P. **GORDON** said that New Zealand had the lowest infantile mortality in the world and one of the highest maternal mortalities, and he asked whether the maternal statistics published were reliable as a guide to incidence rate, of puerperal sepsis. In New Zealand puerperal morbidity had to be notified—i.e., every patient in hospital who had a temperature of over 100° F. for more than two days.

Dr. JAMES **HENDRY** spoke of cases in Paisley in which pyrexia did not occur until after birth. For all cases there was a morbidity incidence of 3 per cent. in the hospital.

Dr. C. E. **DOUGLAS** said that in his general practice of 44 years he had had 2200 cases and had operated on 557. He applied forceps in the second stage of labour whenever he thought it proper to do so. He had had only one death from sepsis. His patients were from a very healthy agricultural district. The factor which had been very little considered was the woman herself. It was not safe to assume that the woman about to have a baby was a healthy person; she might have tubercle bacilli in her system which would only reveal themselves in pregnancy. And the pregnant woman showed various abnormalities in comparison with the non-pregnant.

Prof. M. H. **PHILLIPS** gave his experience of these cases in the Monsall Hospital, Manchester, in which a block was set apart for puerperal fever cases. They had been treated by ordinary methods. Since the beginning of 1924, however, he had treated the cases of septic uterus by putting into the uterus glycerine, and the results had been very promising. Forty-five cases were so treated, and their average stay in hospital was 25·9 days, as compared with 30 days under treatment by rest, or by rest and sharp curettage. He exhibited comparative tables of his results.

Lady **BARRETT** spoke of the investigation of a series of cases of morbidity occurring in hospital, from the point of view of the source of the sepsis, and the best way of ending the sepsis in each case. There were two separate outbreaks of infection, which seemed to have different causes. In one it seemed to be due to the accoucheur, who had severe oral sepsis. Cases delivered by that person who were not on the morbidity list also showed some rise of temperature, but not up to 100° F. Probably their own resistance was effective against the infection. In the second series there seemed to have been nothing in common, except that each, during the first few days, had been in the same position in a particular ward. When this movement was stopped and no further admissions were allowed until the ward had been fumigated, no further cases occurred. The speaker showed how different people exhibited a very varying response to similar circumstances.

Mr. A. W. **BOURNE** said that the preventive aspect of the subject required that more bacteriological and serological work should be done. Twenty-five per cent. of the cases mentioned in one of the reports had no apparent ætiological factor. With regard to the other 75 per cent. of cases, the great need seemed to be more efficient teaching. Students and the profession generally could not be too insistently taught the enormous importance of antenatal examination and treatment, and the necessity for only the minimum intranatal interference.

Dr. T. **WATTS EDEN** said the profession had scarcely yet begun the systematic study of puerperal infection; it had not even settled whether, for the most part, the infection was intrinsic or extrinsic. Nor was the real significance of streptococci in the vagina known. Until hospitals provided special accommodation for puerperal sepsis cases, so that they could be investigated from beginning to end, there would not be much progress in the matter. There must first be real assistance from the Government. On the suggestion of Dr. Fletcher Shaw, he proposed that a memorial be sent from this Congress to the Ministry of Health urging the provision of hospital accommodation for the care and investigation of these cases.

This proposal was unanimously agreed to.

At the Thursday morning session the chair was occupied by Prof. B. P. **WATSON**.

Prolapsus Uteri.

Prof. W. W. **CHIPMAN** (Montreal) read a paper, which was illustrated on the epidiascope, on prolapsus uteri, describing the operation now being done for the condition in Montreal. He said that though no one operation would suit all cases, this method had satisfactorily stood the test for ten years. The condition was really a sacro-pubic hernia through the fibrous diaphragm of the true pelvic floor; it was a sliding hernia. The operation he described consisted in exposure of the fascial cleft, the replacement of the viscera, and the radical cure of the hernia. He regarded the operation as anatomically sound; and it was a simple one.

Mr. R. H. **PARAMORE** said he had not met with the masses of fibro-muscular tissue in the pelvis which Prof. Chipman described. During the last five years he had been doing an operation on the muscle floor of the pelvis only, which he described, and mentioned three cases in which he had carried it out.

Dr. G. **FLETCHER SHAW** said that if the perivascular tissue were thoroughly stitched in front of the cervix and a posterior colporrhaphy done there would be no fear of any recurrence. The operation was much more satisfactory when a good portion of the cervix was removed.

Dr. **LEITH MURRAY** said that in Newcastle the cervix was amputated for this condition in child-bearing women.

Prof. **MUNRO KERR** remarked that if the cervix were well dilated before doing amputation, stitching was rendered very much easier. The vagina should be thoroughly packed afterwards.

Mr. T. G. **STEVENS** spoke of the secondary hæmorrhage which was sometimes encountered about the seventh to the tenth day, usually due to the cutting through of the suture which turned in the mucous membrane to the cervical canal.

Dr. **FITZGIBBON** said one of the advantages of the operation was the conservation of vaginal mucous membrane, especially at the fornices. Unless there was marked hypertrophy of the cervix, it could usually be saved.

The After-Results of the Subperitoneal Gilliam Operation.

Dr. **BETHEL SOLOMONS** read a contribution on this subject. He said there were divergent views on the treatment of backward displacement, and many symptoms followed upon it. 176 replies had been received from patients on whom the operation had been done more than a year ago. Four were absolutely cured of sciatica which had been intractable. Of the 107 who had had backache, 101 had relief, 6 were not benefited at all. Some who had had dysmenorrhœa were cured of it by the operation. 67 of the women had since had children at full term; only 3 had since had miscarriages. The main indications for operation were backache, sterility, dysmenorrhœa, and frequent abortions. Full anæsthesia was necessary, otherwise the rigidity of the recti impeded the operation. He was very favourably impressed by the results.

Prof. A. DONALD protested against these abdominal operations undertaken for retroversion, the frequency of which almost amounted to a scandal.

Prof. WATSON spoke of the difficulty of diagnosing the cause of this condition. One of the commonest was cervical laceration. A pessary should be applied in doubtful cases. Every means should be taken to eliminate the uterus as a possible cause.

Dr. WILFRED SHAW read a paper on the relationship between ovulation, corpus luteum formation, and menstruation, and Prof. MUNRO KERR one on a case of pseudomyxoma peritonei with affection of the appendix.

The chairman at the Thursday afternoon session was Prof. T. WILSON.

Premature Separation of the Placenta.

Prof. WHITRIDGE WILLIAMS gave a contribution on this subject. He said that in 9000 admissions to his clinic there were 57 cases of premature separation of the placenta and 64 cases of placenta prævia. He discussed specially 40 cases, from 15 to 43 years of age. Twelve were primiparæ. In 19 of the 40 cases the condition was mild, in 21 it was severe. Ten cases required Cæsarean section. There were 3 maternal deaths, 29 fœtal deaths, all in the Cæsarean section cases. Inflammatory changes in the decidua could be excluded, and syphilis played no part; in 37 of the 40 cases the Wassermann was negative. He admitted he did not know the cause of the condition. It had been stated that albuminuria played a marked part, but 15 of these patients showed no sign of albuminuria, either before or after the accident. On two of the women who died post-mortem examinations were done, and no sign of toxæmia was found. He agreed with a French authority that in cases of premature separation no special significance should be attached to an increased pulse-rate.

Prof. WATSON said he thought it would be agreed that the primary condition was hæmorrhage into the uterine wall, and the separation of the placenta was a mechanical result of that.

Treatment of Inoperable Carcinoma by Radium.

Papers on this subject were read by Dr. MALCOLM DONALDSON and by Dr. G. I. STRACHAN.

Dr. Donaldson said his object was to show the effect of radium treatment on the local condition. In the more recently treated cases with the longest duration of treatment, the growth disappeared in, on the average, five to six weeks, in the less advanced conditions the time taken for disappearance was even less. The method followed was to insert a number of needles (2 to 13) of 100 to 110 milligrammes of radium element, and the duration of application was eight hours. The results in these severe cases were such that it was important to have organised research on the subject. He pleaded for full reports of cases so treated, stating whether the actual salt or the gas emanation was used, the number of milligrammes, the applicators, and the time of appli[illegible]tion of the irradiation. He described his procedure [illegible]tail and exhibited full lists of his cases. In a general way, mild irradiation over a wide field for a long time he found best.

Dr. Strachan gave his results in 40 cases of carcinoma. In some the cervix had ceased to exist as a protrusion into the vault, and was represented by a bleeding ulcer, hence it was difficult to apply the radium. After the radium treatment there should be a douche every morning for three weeks, as it prevented the supervention of vaginitis. In the presence of vesico-vaginal fistula, radium was inadmissible, as acute cystitis was apt to be set up. Six weeks after radium had been applied there was evidence of increased fibrosis, and 11 weeks afterwards most of the cells were entirely degenerated. The reaction of carcinoma of the cervix to radium was good, but that of carcinoma of the vagina to it was not so good. In epithelioma of the vulva the result of the application of radium was bad.

Albuminurias of Pregnancy in New Zealand.

Dr. AGNES BENNETT read a paper entitled The Albuminurias of Pregnancy in the State Maternity Hospitals of New Zealand. It consisted of a plea for authoritative pronouncements on this subject for the guidance of all practitioners in the Empire, especially in the matter of treatment.

Toxæmias of Pregnancy.

Prof. LOUISE MCILROY read a contribution by herself and Dr. E. Pillman Williams on the toxæmias of pregnancy from their clinical and chemical aspects. The paper stated that the authors had not arrived at any definite explanation of the origin of the group of conditions dealt with, nor why one symptom or group of symptoms should declare themselves. In many it was difficult to say where physiological changes ended and pathological changes began. In many instances they considered that toxic conditions existed previous to the pregnancy, and that the chief sources of these toxins were in the intestine. The ovum was added to the toxic factory, and contributed its quota to the toxic state. In pregnancy there was an inability to cope with the toxins arising from defective excretion, coupled with toxins from th ovum, though the trophoblast was responsible fo the generation of toxins rather than the fœtus The main point was as to whether toxæmia was present, and if so, what was its severity? In many of the cases there was chronic intestinal stasis with distension of the colon over the region of the cæcum; in many there was a history of attacks of appendicitis. Toxæmia was more marked in primigravida than in multipara. There was a definite fall of nitrogen content in the blood throughout the whole gestation. Most of the cases of vomiting admitted to the wards showed signs of toxæmia; it was not a question of mere neurosis. Headache in some cases was found to be due to increased intracranial tension, and usually there were small rises in the blood-urea. If œdema occurred early in the pregnancy, the cause was to be found in deficient renal function. In cases which had vomiting, increased food gave better results than the induction of abortion. Only 3 of the 172 cases recorded had to have abortion induced; and in this series there was only one case of eclampsia.

At the concluding session on Friday morning the chair was occupied by Dr. LOUIS CASSIDY.

Endometrioma.

Prof. A. DONALD and Dr. K. V. BAILEY submitted the results of a clinical and pathological study of endometrioma, bringing out the chief points by epidiascope demonstrations. 108 cases were passed in review. Of 55 cases there were 35 women who had had no pregnancy for seven years. The most important symptom was dysmenorrhœa, which was present in 70 per cent. It was acquired in 55 per cent. of these. Menorrhagia was present in 57 per cent., leucorrhœa in 38 per cent., and backache in 28 per cent. Pain on defæcation and other rectal troubles were complained of by some. Tarry cysts were found at operation in 77 per cent., and an adenomyoma in the recto-vaginal space in 63 per cent. A very important feature was that the rectum was adherent in 76 per cent., and there was need, the authors considered, for a careful investigation of the nature of the causal irritation.

The last contribution was a very elaborate one, supported by a wealth of photomicrographic slides, on the implantation of the human ovum, which was given by Prof. J. H. TEACHER, of Glasgow. He showed that fertilisation and implantation did not correspond to any part of the cycle in particular, but might occur at various points. There was not a long delay in fertilisation, but spermatozoa had a long viability. It seemed that rupture of the follicle nearly coincided with the insemination, and that fertilisation took place very shortly after that. Fertilisation had occurred within four or five days of the period being due, and as implantation did not occur for at least seven days—some declared it was ten days—it was not implantation of the ovum which stopped menstruation. That function was stopped, in his view, by fertilisation.

The thanks of the Congress were accorded Prof. Teacher for his demonstration.

During the Congress an instructive pathological exhibition was held under the control of Dr. Everard Williams. On Thursday members of the Congress dined together, and on Friday afternoon many operations were witnessed at a number of London hospitals.

Resolution.

On Wednesday the Congress agreed unanimously to the principle of a resolution to go to the Ministry of Health. On Friday the exact terms were approved, also unanimously, as follows:—

> "In the opinion of the British Congress of Obstetrics and Gynæcology, the most urgent requirement in connexion with the problem of sepsis is the provision of adequate accommodation for the reception and treatment of these cases in hospitals, supervised, wherever possible, by obstetric surgeons."

ROYAL SOCIETY OF MEDICINE.

SECTION OF UROLOGY.

A MEETING of this Section was held on April 23rd, Mr. CYRIL NITCH, the President, being in the chair. A discussion on

Bacterial Infections of the Urinary Tract

was opened by Prof. LEONARD DUDGEON, who confined his remarks to a few of the types of infection that might be encountered. (1) A special group of hæmolytic bacilli, isolated by himself, of which he had met many hundreds of cases. The condition and the bacillus strongly resembled that of paratyphoid at first sight. In a certain number of cases it had been possible to recognise the same organism, by serological tests, in the intestinal tract of patients suffering from urinary infection. The course of the infection differed markedly from that due to *B. coli* in the short acute course lasting for two or three weeks and then clearing up completely. If relapses occurred they were short. Patients suffering from this infection were more sensitive to vaccines than any others, and vaccine treatment produced immediate rise of temperature and return of severe clinical manifestations. Vaccine should never be given until the temperature had been normal for several days, and most cases recovered satisfactorily without it. (2) *B. coli.* Two strains of this bacillus were encountered—a hæmolytic variety, which accounted for 70 per cent. of cases in the male and 30 per cent. in the female, and a non-hæmolytic variety for which the sex percentages were exactly reversed. It was easy to immunise rabbits with the former but very difficult with the latter. The vast majority of colon bacilli were non-hæmolytic; the other kind was met with in certain cases of severe diarrhœa. It had long been believed that the intestinal canal was the origin of *B. coli* infections of other parts, and he had been able to prove this experimentally in a certain number of urinary cases. Treatment by vaccines was not satisfactory; it was very difficult to produce any degree of immune substances in the blood. An autogenous vaccine should be used, because of the two types; the hæmolytic type was more likely to be benefited by vaccines. If there was hypersensitivity to vaccine the dose should not be pushed or severe tissue damage might result. Animal experiments showed that if *B. coli* was held up in any part of the body it produced a suppurative lesion, as, for instance, if injected into serous sacs. In chronic cases it had been proved that coli abscesses were present in the kidney in those instances where the administration of vaccine caused rise of temperature. In those instances where he had investigated second attacks he had found that the organism was always identical with that causing the first attack. He therefore concluded that it had lain dormant somewhere in the urinary tract, although the urine might have cleared up completely. (3) *B. proteus.* Although some people regarded this as a non-pathogenic organism it might lead to the most acute infection, with the bacillus recoverable from the intestine and blood-stream. The urine in such cases was alkaline, containing a great deal of mucus, triple phosphates, and pus. A vaccine might be given when the acute stage was over and was sometimes successful. (4) *Staphylococcus albus.* The presence of this coccus in large numbers with pus in the urine was, in his experience, invariably associated with the existence of a calculus.

Dr. E. LEPPER described experimental work on the production of lesions in the kidney in rabbits by *B. coli*, in an attempt to account for the fact that intravenous injection of the organisms rarely caused serious damage unless there was coincident obstruction to the flow of urine. Compression of the ureter for 55 minutes resulted in necrosis of the cortex with multiple small abscesses, distension of the tubules, and inflammatory reaction. Even so short a compression as 15 minutes produced marked abscess formation, and if the animal were examined immediately, the pelvis was found to be distended with blood-stained urine and the renal vessels much dilated. The effect of the obstruction appeared to be produced by back pressure; the urine, being secreted and unable to escape, caused such distension of the veins that rupture occurred with extravasation of blood, containing bacteria, into the kidney substance. If no urine were secreted during the time of the experiment none of these results occurred. Injection of bacilli with no obstruction led to naked-eye lesions in 8 cases out of 50 only, with microscopic abscesses in 20 more. The process appeared to be one of bacterial embolism, setting up focal abscesses which might rupture into the tubules or on to the surface of the papilla and occasionally might cause infection of the whole pelvis. There was no known reason why the vessels of the papilla were more liable to embolism than those of the cortex.

Sir JOHN THOMSON-WALKER dealt with the diagnostic and therapeutic aspect of the problem, confining himself to those instances in which there had been no previous disease of the kidney. The acute case was ushered in by four or five days of prodromal symptoms, insufficient to cause the patient to seek advice. These took the form of irritability, loss of appetite, hypersensitivity to heat and cold, a little frequency of micturition, a little more flatulence or constipation or relaxation of the bowels than was usual. Then the attack began suddenly with frequency of micturition, in all degrees of urgency up to strangury. After a few hours there was rigor and rise of temperature. The urine was passed in small quantities, was cloudy, offensive, and might contain a little blood. There was distension of the bowel and constipation. More localising symptoms followed, generalised abdominal pain finally settling in the loin, sometimes taking the form of renal colic. A little rigidity and tenderness might be felt and a little enlargement of the kidney. If the condition was passing on to one of pyonephrosis there would be a swinging of the temperature, the local symptoms would be more severe, and the urine would become clear. But there might instead be difficulty in passing water, going on to retention, or pain, a sense of weight, and aching in the rectum with enlargement and tenderness of the prostate or distension of the vesiculæ seminales. Or localising symptoms might be entirely absent. The attack might last 14 or 21 days or drag on up to two or three months. Often there were exacerbations or recurrence of symptoms after complete subsidence. Uncommon symptoms were: (1) High temperature without other phenomenon. (2) Pain as the principal feature, either aching or severe in nature; such cases were liable to be diagnosed as appendicitis. (3) Renal colic, which might be just as acute with a descending ureteritis as with a descending stone. (4) Hæmaturia as the first symptom. In such a case the infective nature of the condition might be recognisable by the characteristic *B. coli* odour of the urine. (5) A sterile urine associated with a suppurative cortical nephritis. There would be high temperature, but few local symptoms, save an enlargement of the kidney due to perinephritis which might pass on to perinephritic abscess. The cause was usually the staphylococcus, and a history of boils or other staphylococcal skin infection could usually be traced. Of the chronic types Sir John Thomson-Walker considered three: (1) Recurrent pyelitis and cystitis. Of this variety there were two types, the acute attack which subsided but was followed six months or a year later by another and that by yet another. Between the attacks there were no symptoms save possibly a little irritability of micturition and slight rise of temperature. In the second type the infection recurred and the urine was sterile between the attacks. Some of these must be genuine reinfections; some were undoubtedly cases of infection of the seminal vesicles, but in the female it was difficult to see where the bacilli might lie dormant. (2) Chronic cystitis with quiescent pyelitis. These cases were very difficult as the ureteric catheter alone would show the real source of the trouble. The pyelitis might give rise to no symptoms at all. Out of 100 cases of cystitis taken at random, 42 had sterile kidney-urine, while the remainder had infection of the kidney. (3) Bacilluria without local symptoms. In many cases this was connected with chronic toxæmia, fibrositis, aches and pains, and stiff joints; many of the milder cases were classed as neurasthenia.

Treatment.

Certain prophylactic measures might be taken against infection from the bowel. The normal barriers preventing the passage of bacteria seemed to be an intact epithelium, with its mucous covering, the lymph nodes in the intestinal wall, and the glands along the colic vessels. An acute bacilluria might follow drastic purgation or Plombières treatment. Prolonged exposure to X rays and radium facilitated the passage of bacteria through the bowel wall, and possibly the removal of the normal appendix might do so also. Operations on the bowel should always be accompanied by the administration of urinary antiseptics. The antiseptics in use were salol, boric, and hexamine. It took some time to split hexamine in contact with an acid urine and the drug was excreted unchanged in cases where there was frequency of micturition. Moreover, the acutely inflamed bladder was unable to contain a very acid urine and the acidity must be limited. In cases with an acid urine Sir John Thomson-Walker had given up the use of hexamine and merely tried to soothe the bladder. The only antiseptic which could be used in an alkaline urine was methylene-blue, which was very mild. The intravenous injection of mercurochrome and methyl-violet, tried in America, had not fulfilled expectations. Lavage of the renal pelvis was the only cure in some cases, but they must be very carefully selected; cases of infection of the prostate or seminal vesicle or of obstruction of the lower urinary tract must be excluded, except in the pyelitis of pregnancy where the lavage seemed to help the condition. It was best in cases of persistent pyelitis.

Discussion and Reply.

Dr. **FOWLER WARD** asked Prof. Dudgeon how to distinguish between the two types of infection clinically in order to decide whether to give vaccine treatment or not.

Dr. **J. A. ANDREWS** mentioned the teeth and tonsils as sources of infection. Certain American experimenters had created cavities in the teeth of dogs and filled them with bacteria from the urine of patients and had succeeded in producing kidney lesions in a large percentage of cases.

Dr. **OLIVER HEATH** described a personal experience of cystitis from which he had attempted to determine the meaning of the symptoms experienced. The frequency of micturition was nature's way of producing frequent muscular contractions, with inflow of fresh blood, bearing antibodies, and of flushing out the bladder. He had found that the discomfort could be reduced to a minimum by drinking water in excess, while the withholding of fluid rapidly produced strangury. Treatment should be based on the sensations experienced as a guide to the *vis medicatrix naturæ*.

Mr. **S. G. MACDONALD** regarded acute infections by the *B. proteus* as rare; they were more usually a terminal stage in old stricture cases. He agreed as to the association of calculus with staphylococcal infection. A very important group not yet mentioned were the cases with sterile urine due to renal blockage. In his opinion surgical interference was only justified when there was this definite and persistent block. He asked where the splitting of hexamine took place as it did not seem to occur with a damaged kidney.

Mr. **H. EVERIDGE** inquired whether the estimation of the cholesterol content of the blood had any practical value in assessing the degree of infection.

Mr. **GRANVILLE HEY** described the case of a primipara three months' pregnant, who had no symptoms save a slight aching in the left loin and cloudy urine. A *B. coli* bacilluria was found associated with a calculus in the left kidney which was successfully removed. Certain American observers had demonstrated a direct continuity between the lymphatics of the right kidney and those of the ascending colon.

The **PRESIDENT** described a case of granuloma of the bowel with cystitis which had been completely cured by the intravenous injection of electrargol. Chronic *B. proteus* infections, in his experience, did well with vaccine treatment but the acute ones did not.

Prof. **DUDGEON**, in reply, said that the examination of a loopful of urine was insufficient; at least 10 c.cm. must be investigated before it was said to be sterile.

Sir **JOHN THOMSON-WALKER**, in reply, agreed that diuresis should always be employed as a method of treatment. He described a case of typhoid bacilluria cleared up by removal of a stone. The splitting of hexamine usually took place in the bladder, but it was a matter of time. The poor results obtained by its use in cases of enlarged prostate were due to the diuresis and great dilution of the urine, so that it is impossible to get a sufficiently high acidity for splitting, and to the condition of chronic interstitial nephritis, due to back pressure, so that less hexamine was excreted. Lavage would cure a certain percentage of cases, but might fail because the patient would not come long enough or regularly enough, or owing to the use of an insufficiently strong antiseptic, or the presence of a slight obstruction or small stone or pelvic dilatation. The worst type of case was a mixed infection with *B. coli* and *B. proteus*. Alkaline treatment encouraged the *B. proteus* while acids encouraged *B. coli*. If the patient happened to get an unconnected tonsil or throat infection the kidney condition became much worse at once, though the reason for this was not known.

MEDICAL SOCIETY FOR THE STUDY OF VENEREAL DISEASES.

A MEETING of this Society was held in the rooms of the Medical Society of London on April 24th, Colonel L. W. HARRISON, the President, being in the chair.

TOXIC EFFECTS OF ARSENOBENZOL TREATMENT.

Mr. DAVID LEES opened a discussion on the toxic effects of arsenobenzol treatment and their prevention. He said that these toxic effects, both after intravenous and intramuscular injection, were produced in many ways, and many factors entered into consideration. The chief determining factors were the health of the patient prior to administration, the preparation of the patient, the drug used, the method of preparing it in solution, and the technique of administration. Physical exertion on the part of the patient, especially just before or after administration, might play a part in some of the reactions that were observed. The daily regulation of the bowels, again, was essential. With regard to the drugs, the "606" group were more toxic in general than the "914," and in the case of "606" it was very necessary to be careful and slow in administration. Indeed, in all the drugs given for the treatment of syphilis this slowness in administration was an important factor. He was a strong believer in dilute solutions, and he believed also in filtration. There was no doubt that any undissolved particles would open the way to accidents, which might be avoided by using completely soluble preparations. In a great many patients psychic reactions occurred at the first administration; they could be overcome usually by careful technique and by having the patient in the lying posture. The fact that the beginning of the injection caused pain to the patient might set up fainting and other minor reactions. Some patients, no matter what precautions were taken, would react adversely to either intravenous or intramuscular injections of arsenic. He discussed the various reactions, first those which occurred immediately on or after administration or within the first 24 hours, and then those which occurred later, up to a period of months. In the immediate reactions were included headache, vomiting, and diarrhœa. It was probable that more than one cause was present in the acute reactions which occurred after treatment with arsenobenzol. In his own experience, with care in the preparation of the drug, and especially in the dissolving of the drug, its filtration before use, and its slowness in administration, the incidence of the immediate reactions, both minor and major, was exceedingly small. Occasionally a sensitive patient was encountered and it was necessary to consider what steps should be taken to safeguard him. Mr. Lees found that with atropine desensitisation there was less likelihood of the patient having cardiovascular upset than with adrenalin. Of the reactions which occurred within 24 hours, skin eruptions, such as herpes and urticaria, were of little importance except as danger-signals. Special care should be taken to watch the kidneys of such patients. He spoke of vasomotor disturbances and gave particulars of cases.

With regard to later reactions, albuminuria often presented considerable difficulty. Was the albuminuria due to drug therapy or to syphilis? Only by waiting and watching could one possibly decide. One of the most interesting reactions was a gross exfoliating dermatitis. There were certain individuals who had a special idiosyncrasy of the skin to therapeutic irritants, and these showed undoubtedly a greater tendency to such a condition. From the experience of the past ten years he could not agree with the observation that the joint exhibition of arsenical and mercurial therapy predisposed to the onset of dermatitis. There was no actual proof that the dermatitis was due to over-excitation of the tissues by metallic arsenic, as suggested by McDonagh, and one was left to assume that it was due to hypersensibility to arsenic on the part of the patient. Patients made a slow and uninterrupted recovery unless complications set in. Of the complications the most dangerous was broncho-pneumonia, while others were peripheral neuritis and jaundice. If these complications could be avoided the prognosis was good. The drug most useful in the treatment of this condition was one of the sulphur compounds. In arsenical dermatitis the Wassermann test frequently became negative and might remain negative for a considerable time. Some workers had stated that such a patient never again showed any manifestation of syphilis, but this he believed to be very dangerous teaching. With regard to jaundice, many considered that this was due to the toxic action of arsenobenzol on the liver tissues. The predisposing factors were constipation and intestinal toxæmia. A very considerable number of the mild cases of jaundice one met with were not due to the salvarsan, although that might be a contributory factor, irritating, as it did, the mucous surface of the intestinal canal. It was a small matter for the inflammation to extend from the bowel through the biliary tract and set up a liver condition. In other words, salvarsan was more likely to injure the liver in a person infected with syphilis who, in addition, had an intestinal toxæmia and a possible predisposition to catarrhal jaundice. For treatment, rest in bed, evacuation of the bowels, and careful dieting were necessary, also the administration of alkalies in association with salicylate of soda, glucose given intravenously, and a diet rich in glucose. As a routine procedure he had recently been giving 50 c.cm. of glucose by the mouth to every patient half an hour before treatment with arsenic. This fortified the liver against the arsenic action, and he had had very few cases of catarrhal jaundice.

In conclusion, he emphasised the great necessity of careful preparation of the patient for administration and careful examination, especially of the urine, prior to administration. Next he emphasised care in dosage and in the technique of administration. Alcohol must be avoided throughout the whole course of the treatment. As to the amount and frequency of the drug, moderate doses should be given with a safe interval (one week), the average course of injections extending over eight weeks and the intervals of rest eight to ten weeks. Except in the early stage of the disease, heroic therapy by massive doses was not of so much value as moderate, safe, and prolonged dosage. Intramuscular administration was to be preferred to intravenous, especially in the later stages.

Dr. J. C. BUCKLEY said that in his clinic for the first two years, while the novarsenobenzol was of the old "Rochester Row pattern" not a single case of jaundice occurred, but during the last five years he had seen about 120 cases of jaundice, all of them very mild, except one, which proved fatal, the patient dying four and a half months after the administration of the drug. Of these 120 cases about 20 occurred among patients who had been put down as provisionally cured, having had a negative Wassermann for two years, and coming up every six months or so for a provocative dose or a test. As to dermatitis, the worst case he ever saw was long before "606" was introduced.

Dr. T. ANWYL DAVIES thought the most important lesson to be gathered was that the prophylactic against arsenical intoxication was intramuscular administration. In addition this had greater therapeutic value, and undoubtedly brought about a negative Wassermann sooner than did any other form of administration.

Dr. FOWLER WARD said that he had had formerly a good many cases of stomatitis, but now he made a practice the first week of giving arsenic and the second week of giving mercury intramuscularly with the arsenic, and since then very few cases of stomatitis had occurred.

Dr. D. N. NABARRO did not think that the psychic effect could be attributed to the drug itself. He found at Great Ormond-street that the same children week after week were sick after injections, and one nervous child used regularly to vomit before the injection was started. Recently he had been treating an adult case who had malaise and nausea after each intravenous injection of arsenic; he tried intramuscular injection of bismuth, and the patient stated that he had the same symptoms. Vasomotor disturbances were very rare in children, and when they did occur he thought they were due to too big a dose for the size of the child. Jaundice was also very rare among children. Some years ago he had one case of dermatitis occurring after a fourth injection of novarsenobenzol; the rash appeared on the first or second day after injection. Unfortunately, the child was not brought directly back to the hospital, but was taken first to an outside doctor. When later it came to the hospital the rash looked exactly like measles. The child was taken into a special observation ward and died.

Dr. H. C. SEMON had had one case of dermatitis, but never a case of jaundice. He was surprised that for the treatment of jaundice Mr. Lees did not suggest thiosulphate of soda; he had himself found that drug valuable.

Dr. C. H. MILLS said that in the earlier days of "606" patients were prepared as for a major operation and were starved. This course had been proved to be erroneous, and now patients were not starved; they were told to avoid physical exertion and the use of alcohol, and constipation was corrected. What was still wanted was some reliable test which could be applied in the out-patient department for the detection of intolerance.

The PRESIDENT said that he had previously ventured the opinion that the use of thiosulphate as a prophylactic might interfere with the therapeutic action of the remedy, but he now desired as the result of further work and consultation to retract that opinion. He also emphasised the effect of cold in increasing the predisposition to dermatitis.

Mr. LEES, in reply, urged that it was a very sound procedure to filter the solution in intramuscular therapy; it made for less pain and discomfort. He said it was more desirable to bring the patient's general health up to the highest possible level than to fill him up with salvarsan or its substitutes.

Clinical Cases.

Dr. H. M. HANSCHELL showed two clinical cases. The first was a Chinese seaman with ulcerating granuloma of the penis. The other was a European, about 30 years of age, who, four and a half months previously, had primary syphiloma on the prepuce, and the *Sp. pallida* was found. The Wassermann test was doubly positive; there were no secondary symptoms. After five intravenous injections at weekly intervals of stabilarsan, totalling 2·7 g., and five weekly injections of bismuth in glucose suspension, totalling 1 g., he developed severe purpura covering the trunk like a bright purple jersey. The liver became enlarged 3½ in. below the costal margin, the spleen 2 in. below. There was no fever or malaise, and the patient insisted on continuing his work, which was that of a carman. There was no albuminuria or glycosuria, and the Wassermann was still doubly positive. Treatment was suspended. A week previously he developed jaundice. The urine was of deep orange colour, there was no bile, no albuminuria, no glycosuria, the liver was not tender (though it was still 3 in. below the costal margin), the spleen was not palpable. The purpuric area was now staining brown. When first seen four and a half months previously there were abdominal pains. On palpation of the abdomen at that time no enlargement of liver or spleen was detected.

BRISTOL MEDICO-CHIRURGICAL SOCIETY.

A MEETING of this Society was held at the University, Bristol, on April 8th, Dr. J. O. SYMES, the President, in the chair, when Mr. A. RENDLE SHORT read a paper on

Diagnosis of the Dyspepsias.

His observations were based on a series of 100 cases of non-malignant dyspepsia, all studied on a definite plan, all verified by operation, and mostly followed subsequently. The growth of accuracy in the diagnosis of dyspepsia was due to: (*a*) Better knowledge of physiology; (*b*) disregard of hæmatemesis as a diagnostic point; (*c*) watching the movements of the bowel by means of X ray screen; and (*d*) better classification. Knowledge of physiology had grown in several ways. It was now known that both the hypersthenic and the hypotonic types of stomach might exist in perfectly normal persons. In the former, the viscus emptied quickly; such persons were apt to have an excess of acid, and were "hungry folk." On the other hand, achlorhydria was not necessarily a sign of disease, any more than was visceroptosis. Again, we now knew that nervous reflex mechanism controlled the sphincters of the alimentary canal, so that delay in any one part might upset matters all along the line, and produce symptoms referred to a region distant from the actual site of the disease. Thirdly, minute lymph nodules were found especially along the lesser curvature of the stomach; these might ulcerate and bleed. Hæmatemesis might be the only symptom of disease, or there might be dyspepsia due to causes outside the stomach and duodenum, accompanied by dangerous bleeding, or finally there might be bleeding from a chronic ulcer. In the series, 1 in 3 of the gastric and duodenal ulcers were accompanied by bleeding, and 1 in 6 of the cases of appendicular dyspepsia. Mr. Short said that he classified dyspepsia as (1) functional, (2) organic, or (3) reflex. Functional did not mean hysterical, but disturbance of function, as with acute and chronic gastritis of alcoholism, dyspepsia of phthisis, anæmia, anorexia nervosa, and so forth—all these were the province of the physician. The reflex dyspepsias were (*a*) gall-bladder dyspepsia—flatulence and vomiting prominent, the vomiting coming especially after certain foods, alkalies did not help, there was often some gastric delay; (*b*) appendix dyspepsia, pain is usually not very severe, was *continuous*, but worse after food—often vomit without relief of pain; (*c*) undiagnosable reflex dyspepsia—pain and vomiting were not related to each other or to food.

Organic disease of the stomach or duodenum might give rise to several types of dyspepsia: (A) *Gastric ulcer.* These cases tended to show a definite sequence, thus—food, relief, pain, vomiting, relief. The relief following a meal tended to be rather over half an hour. The pain was severe and vomiting the rule. A test-meal was useless in diagnosis, but X rays might give great help. If later pain became continuous and was felt in the back, pancreatic involvement might be suspected. (B) *Duodenal ulcer.* Vomiting was less common, only half the cases showing it. Relief obtained by food lasted usually over an hour. The pain was severe. Test-meal was of little service, though hyperchlorhydria was the rule, but deformation of the skiagraphic duodenal cap was characteristic when seen. The stomach usually emptied rapidly, but this was a cause rather than a consequence of the ulcer. (C) *Duodenal ileus* might occur by itself or be a symptom of other disease. Flatulence and nausea were marked, vomiting was common, pain was not severe, and the relation to food was obscure. The skiagram might be definite, showing great delay and distension of the second and third parts of the duodenum; duodeno-jejunostomy brought about a cure. (D) *Periduodenal adhesions* might give rise to bad pain, even after taking water. Vomiting was usual, bleeding absent. The X rays showed gastric delay. (E) *Gastric cancer* was accompanied by great loss of appetite. Pain might be continuous. A test-meal might show nothing, but X rays might reveal a typical deformity. (F) *Pyloric stenosis*, hour-glass stomach, or leather-bottle stomach might account for dyspepsia. Mr. Short showed a number of skiagrams illustrative of his paper.

Discussion.

The PRESIDENT appeared to think that a better title would have been "Diagnosis of Surgical Dyspepsia"; only a small proportion of dyspepsia was amenable to surgery. A great proportion was due to worry. He viewed with distrust cases called appendicular dyspepsia. But he agreed with Mr. Short as to the anorexia of gastric cancer, and the small value of a test-meal.

Mr. C. A. MOORE asked what were the symptoms and pathology of duodenal ileus. He thought deformity of the duodenal "cap" rare. He related a case illustrative of the great difficulty of diagnosing gall-stone from duodenal ulcer. He agreed with Mr. Short that an atrophic appendix might be the cause of dyspepsia, and also that the dyspepsia might be accompanied by hæmatemesis.

Dr. D. A. ALEXANDER spoke of the value of long-kept records in diagnosis of dyspepsia, and instanced in this connexion cases of tuberculous adhesions.

Mr. A. W. ADAMS agreed with Mr. Short's observation as to duodenal ileus. He found this condition in one case diagnosed chronic appendicitis. He suggested that this condition might be associated with those cases of acute post-operative gastric dilatation, the mesenteric vessels being responsible.

Mr. SHORT, in reply, said that though duodenal ileus was difficult to diagnose before operation, in a typical case this was possible. He was glad others agreed that dyspepsia and hæmatemesis occurred as symptoms of appendicitis.

Diagnosis of Nasal Sinus Disease.

Dr. P. WATSON-WILLIAMS read a note on some points in the diagnosis of nasal sinus disease. He showed by what means, using the suction-syringe method of sinus exploration, it was possible to differentiate between cells. Especially might this become important when one sphenoidal sinus was very large and the other small; the large sinus might be entered from the opposite side of the nose in mistake for the sinus of that side, and the latter thus overlooked. In certain cases, notably those with involvement of vision, this might lead to serious errors in the diagnosis. The point was illustrated by a collection of lantern slides.

GLASGOW ROYAL MEDICO-CHIRURGICAL SOCIETY.

AT a recent meeting of this Society, Prof. ARCH. YOUNG, the President, in the chair, Dr. IAN STRUTHERS STEWART (Nordrach-on-Dee) spoke on some points in the

Diagnosis and Prognosis of Pulmonary Tuberculosis.

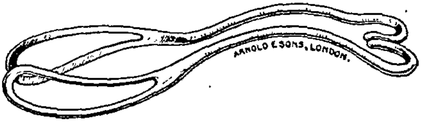
Dr. Stewart referred briefly to the pathology in relation to the infection and subsequent spread of the disease. The infection was at first one of the lymphatic system, and in the less acute cases the route might be through the tonsil to the cervical, mediastinal, bronchial glands, and thence by way of the peribronchial lymphatics of the larger bronchi to the lung, the sub-pleural lymphatics, and the visceral pleura. The inflammatory changes which took place in the bronchial wall as a result of the infection of the peribronchial lymphatics might be followed by caseation and ulceration into the lumen of the bronchus and infection of the lung, or by blocking of the lumen with subsequent collapse of the lung area supplied—a condition which favoured the further spread of the disease. Referring to the comparative frequency of the early signs and symptoms, Dr. Stewart gave the following percentages of frequency as a result of an analysis of 200 consecutive cases: Cough, 60; lassitude, 18; pyrexia, 42; hæmoptysis, 27·5; pleurisy, 21·5; loss of weight, 12; loss of voice, 8; night-sweating, 7; dyspepsia, 3·5; neurasthenia, 1. The grouping of these into toxæmic and localising symptoms served to emphasise the fact that the toxæmic symptoms—lassitude, pyrexia, loss of weight, night-sweating, indigestion, and neurasthenia—might appear before any physical signs could be detected. The importance of accurate observation of the temperature was urged and several illustrative charts were shown. The speaker went on to co-relate the signs and symptoms with the pathological changes. When the infection was spreading through the lung it might be that the only signs present were loss of expansion—more obvious above the nipple or in the axilla—with some faintness of breath sounds on one side. Narrowing of Krönig's area of resonance over one or both apices might be found or diminished tidal expansion at one or other base. Dullness was not usually demonstrable at this stage, but a few fine crepitations, audible only after coughing, under the clavicle or above or external to the nipple or in the interscapular region ought to be viewed with suspicion. As the swelling of the bronchial wall increased the breath sounds became harsh, and this harshness was more easily detected in inspiration. With the broncho-pneumonia dullness appeared, often more easily detected high up in the axilla. Broncho-vesicular breathing now appeared, becoming more bronchial as the consolidation increased. It was clear from a consideration of the pathology that to detect the earliest evidence of pulmonary tubercle both percussion and auscultation must be used in conjunction with systematic inspection and palpation. In conclusion, Dr. Stewart described the technique for the radiological examination of the lungs and referred to the important points in the interpretation of the appearances seen in an early case.

In the discussion which followed, Dr. E. F. M. MACGREGOR, Dr. J. A. WILSON, and Dr. FERGUS HENDERSON took part.

New Inventions.

IMPROVED ASSALINI MIDWIFERY FORCEPS.

I HAVE modified Assalini's forceps by adding a backward curve of the handles to give an axis-traction effect in the simplest possible manner. Traction is applied to the extreme end of the handles when the full value of the backward curve is obtained. The good points possessed by the original Assalini instrument appeal to the general practitioner, who conducts his confinements with his patient in bed. With Assalini forceps there need be no difficulty in passing the upper blade with the lower one already in place. The upper blade is passed first, horizontally in front of the sacrum and then rotated carefully into its proper position. The nurse can then hold it well back while the lower blade is passed into place. This manœuvre is not impossible with ordinary forceps, but to make it easy the lock needs to be reversed. Furthermore, the Assalini instrument entirely avoids the risk of compressing the head.



Messrs. Arnold and Sons (John Bell and Croyden, Ltd.), 50–52, Wigmore-street, London, W. 1, are the makers.

R. H. BOTHAM, M.R.C.S., L.S.A.

Skelton-in-Cleveland.

Reviews and Notices of Books.

THE STRUCTURE OF THE RED CORPUSCLE.

The Erythrocyte and the Action of Simple Hæmolysins. By ERIC PONDER, Lecturer on Physiology in the University of Edinburgh. London and Edinburgh: Oliver and Boyd. 1924. With 11 text figures. Pp. 192. 12*s.* 6*d.*

THIS book should be read by everyone interested in red blood corpuscles, which, adding together only the hæmatologists and immunologists, means a good many people. Its aim is to discuss the old problem of the structure of the red cell, why it has its extraordinary shape, and what happens when it is swollen and shrunk and lysed by various agencies, and especially what light the study of hæmolysis throws on its essential architecture. There are publishers who would have delighted to describe Dr. Ponder's dissertation on these subjects on the book wrapper as a "he-book," for the vivid zest and certainty with which he criticises and mostly condemns those who have previously ventured into the field—himself included (pp. 119, 151)—will at least arouse those attacked to think hard.

There are two outstanding problems about the structure of the red cell. The first is why it is a biconcave disc instead of spherical, as all homogeneous bodies of that size floating in a liquid ought to be and try to be; the same question arises in an even more acute form when still smaller bodies, such as influenzoid bacilli, are concerned. It seems evident that the curious shape of the red cell, so admirably adapted to its function, must be due either to an internal architecture, which is equivalent to an arrangement of ties and struts, or to local differences in the outer skin, which lead to surface forces having local effects. The second problem is—what is the structure of the cell? On this a great many different views have been put forward, ranging from the extreme on the one hand that it is essentially like a piece of gelatin (Rollett *et al.*), to the extreme on the other hand that it is a bag filled with a solution of hæmoglobin (Schafer *et al.*). Dr. Ponder rightly recognises that no certain answers can yet be given to these questions and his lively discussion will help us to clarify our thoughts. The observation that saponin makes red cells swell up into spherical balloons just before they hæmolyse strongly suggests that the shape is maintained by some sort of structure under stress, which gives way at an early stage in the process of lysis. The facts of swelling and shrinking in different salt solutions and the established differential permeability are, as Dr. Ponder points out, really impossible to reconcile with any theory of structure which does not postulate a functional, if not a morphological, limiting membrane. Contrariwise, the view that we have a simple solution of hæmoglobin in a bag is hardly compatible with the extraordinarily interesting phenomenon of reversible hæmolysis described by G. S. Adair, J. Barcroft, and A. V. Bock, and more fully by R. Brinkman and A. v. Szent-Gyorgyi (the author fails to give the reference to the latter in his bibliography: it is *Journal of Physiology*, vol. lviii., p. 204). Dr. Ponder recommends us to remain doubtful on certain unproven questions, and in the end takes his own advice and comes to a tentative conclusion that the truth lies somewhere between the two extremist positions. A large part of the book is occupied with a detailed account of the quantitative aspects of hæmolysis, mostly from the author's own researches with saponin and bile-salts. The results are simple up to a point, and it will be a satisfaction to those who believe in general principles to find him strongly in favour of the proposition that the resistances of the cells are distributed according to the normal curve. Another point to which special attention may be drawn is his proposal that the setting free of hæmoglobin is only a first stage in, e.g., saponin hæmolysis, and that it is succeeded by a phase of considerably longer duration in which the stromata are also dissolved; the process ought to be looked at as a whole, especially if its nature is going to be identified by mathematical analysis. Lysis by distilled water is not followed by this "stromatolysis."

The book, then, contains much good information and stimulating discussion and, which is more important, provides abundant incitement to thought and fresh experiment. On broad lines we thoroughly recommend it and the series of biological monographs and manuals under the general editorship of Dr. F. A. E. Crew and Dr. Ward Cutler, of which this volume is the second, will do well if the present standard is maintained. In detail, however, there is much which is unnecessarily emphatic and a certain amount which is heedlessly inaccurate. If an author assumes a polemical and critical attitude, he does well to be rather over-nice about his own precision. The method, for instance, of measuring red cells used by C. Price Jones is dismissed as "valueless" (p. 15) and the deductions as "absurd" (p. 22); "the statement made by Price Jones that fixation with osmic acid leaves the cells unaltered in size is to be emphatically denied" (p. 15), which seems going to unnecessary trouble since Price Jones makes no such statement in the papers referred to nor, we think, in any other of his writings. In a later section (p. 162) Dr. Ponder considers the theories which have been put forward to account for the nature of the process of bacteriolysis. After disposing of Arrhenius, he notes that "no evidence is adduced in favour of the highly improbable assumption" about cyclical changes in bacterial resistance advanced by H. Chick (*Journal of Hygiene*, 1908, vol. vii., p. 92) and that the modification introduced by that author in a later paper (Ibid., 1910, vol. x., p. 237) "is less reasonable than the original view, if that were possible." In neither of these papers does Chick deal with bacteriolysis; they concern the killing of bacteria by heat and disinfectants; her observations on bacteriolysis will be found in the same journal (vol. xii., p. 414). Similarly, we read (p. 161), "Henderson Smith has shown that the phenomenon of bacteriolysis is to be explained" in a way that Dr. Ponder thinks reasonable; no reference to the original is given, but the well-known papers by Smith in the *Annals of Applied Biology* (1921, vol. viii., p. 27; 1923, vol. x., p. 335) are not about bacteriolysis, but concern the killing of *Botrytis* spores by chemicals and by heat. And this is immediately followed by the assumption that the killing of *Colpidium* by corrosive sublimate is so "similar" to bacteriolysis that it is germane to a discussion of hæmolysis.

THE PSYCHOLOGY OF EMOTION: MORBID AND NORMAL.

By JOHN T. MACCURDY, M.D. Hopkins, M.A. Cantab., Lecturer in Psychopathology, Cambridge University. International Library of Psychology, Philosophy, and Scientific Method. London: Kegan Paul. 1925. Pp. 589. 25*s.*

Dr. MacCurdy when on the staff of the Psychiatric Institute of the New York State Hospitals was a colleague of the late Dr. August Hoch, whose work on "Benign Stupors" he completed for publication. The book under review continues the same theme, the psycho-analytic study of manic-depressive insanity, the conclusions as to the psychology of emotion being really a secondary product of the main research. Kraepelin's unification of the manic-depressive group is accepted, but his claim that the unity depends upon a constitutional disposition is vigorously attacked and Kraepelin is placed among "that stout-hearted little band of survivors from the period when psychology took no account of unconscious mental processes." The author enlarges the classification by introducing the reaction types of stupor, involution melancholia, anxiety and perplexity, and premises "the unknown, unconscious factor which leads to abnormal reactions." In the discussion of theories of emotion McDougall's views, widely accepted in this country, are severely handled; MacCurdy holds that emotional expression occurs when instinctive reaction is held up, that it may be limited to objectively observed expressions, and that only when the subject has self-conscious awareness is the emotion perceived as "affect." The Œdipus complex, he claims, is recognised by its effects and provides a hypothesis to cover a large range of phenomena, the apparently incoherent utterances of the insane, for example, acquiring coherence and relevance when they are assumed to be variations of this fundamental theme. The main part of the book consists of full case descriptions of the type reactions, and the important clinical point emerges that the appearance of infantile sexuality in a gross form is diagnostic of dementia præcox with its inevitable deterioration. Chapters on dreams link up morbid and normal psychology, and the main conclusion is that "Emotional expression is the product of unconscious images which stimulate involuntary behaviour, either overt or visceral, accessory to purposeful actions."

The book is difficult reading. Some of the difficulty may be personal to the reviewer, some belongs to the subject, but some arises from a lack of emphasis that makes the selection of essentials rather a task. In Chapter XI., for example, the author writes of "this formula," but the phrase refers to a page of dissertation which the reader would be grateful to see concisely summed up in anything resembling a formula. Nevertheless, the book is a record of painstaking and original work in a direction that promises to illuminate some of the fundamental problems of psychiatry.

THERAPEUTICS.

L'Année Thérapeutique. By Dr. L. CHEINISSE. Fifth year, 1924. Paris: Masson et Cie. 1925. Pp. 186. Fr.8.

THIS therapeutic annual consists of annotations from the medical literature of the previous year, and it reviews new methods of treatment adopted not only in France, but in all the principal countries of the world under the headings of "Maladies and Symptoms" and "Therapeutic Technique and Method." Within the limits of its size it can scarcely claim to be complete, but it does give a fair idea of the trend of therapeutics, as witness the number of diseases for which insulin is recommended in the present volume. Perhaps the most pleasant feature of this little book is the author's habit of referring to a writer he is quoting as "notre confrère." This is a personal touch which will unfortunately be missing from future editions, if such appear, for Dr. Cheinisse was killed in an accident in November, 1924, and an unfinished preface to this volume represents the last lines he wrote.

OPHTHALMOLOGICAL SOCIETY'S TRANSACTIONS.

Transactions of the Ophthalmological Society of the United Kingdom. Vol. XLIV. (Session 1924.) London: J. and A. Churchill. 1924. Pp. 452.

THIS annual publication maintains regularly or improves upon its own high standard. The present volume, besides the report of the annual congress held in May, 1924, includes a report of the Oxford Ophthalmological Congress which occupied three days of July, and comparatively short reports of the proceedings of the Midland, the North of England, and the Irish Ophthalmological Societies. A discussion on the physiology and pathology of the pupil reactions will be read with interest, the opening papers being by Sir J. H. Parsons, Prof. E. Bramwell, and Mr. R. A. Greeves. Other papers worth special attention are one on the practical applications of the slit lamp, by T. Harrison Butler and Basil Graves, and an important paper on the pathology of keratitis punctata, by M. S. Mayou. There is a useful discussion on ocular symptoms in subarachnoid hæmorrhage by Leslie Paton, and one on eye symptoms in the early diagnosis of disseminated sclerosis opened by Mr. Brownlow Riddell; a paper by Dr. Ivy Mackenzie on the trigeminal system as an integrating mechanism in disorders of the eyes; and finally one by Ida C. Mann on coloboma iridis and its embryology. This last is illustrated by 16 admirably clear figures.

At Oxford the chief subjects discussed were the general principles of the treatment of concomitant squint, the openers being E. Landolt, of Paris, and Ernest Thomson, and ophthalmology from a legal aspect, a subject which was presented by Mr. H. H. Joy, K.C., in a paper containing useful advice concerning evidence in eye cases in the law courts. Other items of interest discussed at Oxford were atypical retinitis pigmentosa (H. F. Hansell, of Philadelphia), chorio-retinitis juxtapapillaris (H. Friedenwald, of Baltimore), an important paper, one conclusion of which is that since the disease is not a separate clinical entity the term should be discarded. F. Park Lewis, of Buffalo, discusses the prevention of blindness as an organised movement, and George Young contributes a paper of interest in which his method of dealing with cases of chronic glaucoma is set forth.

Of the numerous contributions to the other societies, one of practical significance is by Bernard Chavasse on the need for correctly placed trial lenses and frames in testing for refraction.

THE ROUTINE EXAMINATION OF THE EYE.

By BASIL LANG, F.R.C.S. Eng., Assistant Surgeon, Royal London Ophthalmic Hospital (Moorfields). London: E. Arnold and Co. 1925. Pp. 156. 6s.

Mr. Basil Lang has done well to rewrite and expand this little book on the methodical examination of the eye published by his father 30 years ago, in a form suitable for the requirements of to-day. The student is advised to read it with the patient or a fellow-student in front of him, so that he may be able immediately to examine the part of the eye in question. This is sound advice. It will, for example, save much time to the student as well as a certain amount of discomfort to out-patients of hospitals, if such an elementary procedure as the eversion of the upper lid be thus learnt by pairs of students practising on each other.

The book is divided into three parts dealing respectively with the external examination, the subjective examination of the eye, and examination in the dark room. It is full of good points that reflect the practical ingenuity of the author. Thus, the method of demonstrating that the contraction of the pupil when an object is seen at close quarters is associated not with accommodation but with convergence, the method of testing the amount of proptosis with the aid of the perimeter and Harman's rule, the warning against a premature insertion of cocaine in cases of corneal ulcer before the corneal sensitivity has been tested, are all important points not to be found in the ordinary text-books. So is the explanation of the familiar fact that in testing for manifest hypermetropia the patient almost invariably accepts a higher convex glass with both eyes open than when one is shaded.

In a book like this we may expect to find some individual idiosyncrasies, and this applies to the recommendation to employ a retinoscope with a hole as large as 7 mm. in diameter. On referring to Mr. William Lang's book, published in 1895, however, we find the same recommendation. Some might cavil at the assertion that in all cases except squinting children a single instillation of a drop of 2 per cent. homatropine and cocaine produces substantially complete mydriasis and cycloplegia in 40 minutes. We think that the statement needs some further qualification, but that it is to be preferred to the insistence on the use for adult patients of atropine which was formerly too often prescribed unnecessarily.

We believe that this book will be popular.

HOW IT WORKS.

Yourself and Your Body. By WILFRED T. GRENFELL, M.D. Oxf., C.M.G., Superintendent, International Grenfell Association, Labrador. London: Hodder and Stoughton, Ltd. 1925. Pp. 317. 7*s.* 6*d.*

Dr. Grenfell's two sons, he tells us in the preface to this admirable book, had reached "the age of ten million Whys? and Hows? and Whens? and Wheres?," so he took the advantage of a holiday to explain to them in simple language the way our bodies are made and how they work. This book is the result of these talks. In an interesting and amusing manner which any child can understand, Dr. Grenfell describes the principles of anatomy and physiology, everywhere illustrating his statements with pictures drawn by himself in which a bearded and unkempt fisherman (himself) and two thoroughly amused boys build up an imaginary body and conduct physiological experiments in a primitive fashion. The author appears to be rather worried lest the fundamental and necessary conception underlying the book—namely, that "an Ego controls the reactions of life through pyramidal cells, as press buttons"—be looked upon as a "menace to progressive scientific thinking." But if the book succeeds, as in our opinion it does, in inculcating in the minds of those who read it a healthy view of life as a result of sound knowledge of their bodies, surely metaphysical questions will be all the better approached when they arise in later life? At any rate, we rather envy Dr. Grenfell's sons, for if they enter their father's profession their early student days will be much easier and much more entrancing as a result of the knowledge obtained in childhood. We predict that grown-ups who buy this book for their children will dip into it with curiosity and then read it from cover to cover at the earliest opportunity. The only criticism that can be offered is that the author does not attempt the task of entering fully into the questions of sex and reproduction. He only touches on the fringe of these subjects, but the way in which he has successfully tackled the rest of physiology makes it probable that he is capable of solving the difficult problem of "how to tell our children."

Reports and Analytical Records.

ÆTHER PURISS, B.D.H.

(THE BRITISH DRUG HOUSES, LTD., CITY-ROAD, N. 1.)

THIS preparation is offered as a new and distinctive quality of absolute ethyl ether. When analysed the following results were obtained:—

Specific gravity	721·0°
Boiling-point range	34·6° to 37° C.

Furfural and methyl compounds were absent, but a minute trace of peroxide was detected when the ether was submitted to the B.P. potassium iodide test. When freshly prepared this is probably a very pure form of ether.

ANTISEPTIC SURGICAL SPIRIT.

(DUNCAN, FLOCKHART AND CO., EDINBURGH AND LONDON.)

This spirit is prepared from industrial methylated spirit and has been treated with denaturants of a harmless character. It is claimed to overcome the difficulty of pyridinised methylated spirit and it may be used for all purposes where the commercial methylated spirit would have been indicated. When examined the spirit was found to be of a pale yellow colour and with a pleasant odour.

Alcohol content	87·5 per cent. by volume.
Denaturant	2·21 " "

The denaturant was a balsam-like substance, very bitter to the palate, and causing a precipitate when the spirit was mixed with water.

BILLOWZONE.

(BILLOWZONE, LTD., 8, SHERWOOD-STREET, PICCADILLY, W. 1.)

Billowzone is a saline preparation which, when dissolved in an appropriate amount of ordinary water, produces a solution said to resemble sea-water. It is claimed that when this solution is exposed in a room its exhalations have a revivifying effect on the atmosphere, resembling, in this respect, sea air.

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Sodium chloride	98·3 per cent.
Moisture	0·9 "
Matter insoluble in water	0·34 "

The solution had a faint blue tinge due to the presence of a minute amount of colouring matter and an odour certainly suggestive of the sea beach. No gas was liberated when the salt was dissolved in water. It may be pointed out that sea salt contains salts other than sodium chloride, and the proprietors claim the presence of nascent iodine. The preparation has been found useful in parasitic skin diseases and in various forms of tonsillar and pharyngeal catarrh.

SPECIAL IMPERIAL DRY CIDER (PRIORY BRAND).

(JOSEPH M. PARRY AND CO., LEOMINSTER.)

When analysed this cider gave the following results:—

Present specific gravity	1001·51°
Original gravity (before fermentation)	1041·72°
Alcohol	5·18 per cent. by volume.
Total sugar as invert sugar.. ..	1·73 per cent.
Volatile acidity (as acetic acid) ..	0·01 " "
Fixed acidity (as malic acid) ..	0·18 " "

The cider was examined for sulphurous, salicylic and benzoic acids and β-naphthol with negative results in each case. The cider was dry in flavour and fully fermented as the small amount of sugar present shows. It was agreeable to the palate, had a pleasant bouquet, was very bright, and in good condition.

DE KUYPER'S SCHNAPPS (SCHNAPPS AROMATICO).

(AGENTS: MESSRS. MATTHEW CLARK AND SONS, LTD., 14, TRINITY-SQUARE, LONDON, E.C. 3.)

Schnapps is the Dutch form of gin. It is a spirit distilled from grain flavoured with juniper berries and other herbs and again distilled. The sample, when analysed, gave the following results:—

Specific gravity	942·28°
Alcohol per cent. by volume ..	45·71 per cent.
Alcohol per cent. as proof spirit	80·06 per cent.
Equivalent to	19·94 per cent. under proof.
Extractives	Nil.

	Milligrammes per 100 c.cm. of absolute alcohol.
Volatile acidity	3·9
Fixed acidity	Nil.
Furfural	Trace.
Aldehydes	Trace.
Esters (as ethyl acetate)	38

No trace of sugar was found. It will be noted that this spirit is considerably above the legal limit for alcohol content of gin in this country—viz., 30 under proof. De Kuyper's Schnapps is a very pure form of potable spirit, possessing a mild and agreeable flavour.

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See also pp. 31 and 36.

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THE LANCET.

LONDON: SATURDAY, MAY 2, 1925.

THE LEGAL RESPONSIBILITY OF THE SURGEON.

Lord **RIDDELL**'s interesting and suggestive paper upon the above subject, read before the Medico-Legal Society,[1] serves, as he observed, to remind us that we live in times of changed aspirations and needs, or imagined needs. Some of these aspirations have been caused, and the imagination of men and women has been stimulated, by changes and progress in medicine and surgery inconceivable by those who in days long gone by moulded the common law and passed statutes for the protection of the bodies of their fellow subjects. "Maiming" to them was "such a hurt of any part of a man's body whereby he is rendered less able in fighting to defend himself or to annoy his adversary."[2] It was punishable as an act that a violent and lawless man would commit upon his neighbour, rather than as one which would be done upon a consenting party. Voluntary maiming, however, was not unknown, and a statute made it a felony for a man to maim himself in order to have "a more specious pretence for asking charity." The altered conditions now confronting us arise out of the possibilities of modern surgery and the temptations offered by changed and changing social conditions. In considering these possibilities and temptations in relation to the medical profession, Lord **RIDDELL** rightly, we think, declared that his main purpose was to draw attention to the situation in regard to the sterilisation of men and women arising out of modern teaching in eugenics, and out of modern views as to the limitation of families. He touched also upon the question of "cosmetic operations" performed in beauty parlours, but these we are inclined to associate with the activities of unqualified impostors, rather than with the efforts of the medical profession to preserve the physical charms of elderly women and men. The principles involved, however, include those governing the position of a surgeon asked to perform any operation not necessary for conserving or improving the bodily health of the person seeking it. Apart from the possibility of mutilation being sought with a view to soliciting charity, our forefathers seem to have usually provided only for the punishment of assaults inflicting "grievous bodily harm," for which graded penalties are now provided, the essence of an assault being the absence of consent by the injured party. What, then, is the position of a surgeon performing an operation which to him and to all but the person seeking it appears unnecessary, whether prompted by vanity, eccentricity, the desire to avoid the bringing children into the world, or any other motive not established as adequate?

Lord **RIDDELL** suggests, with particular relation to beauty parlours, the possibility of sepsis and death following an operation, with a prosecution for manslaughter as a sequel. This appears to us a reasonable test, subject to the observation that if an unnecessary operation were held to have had as its object the "maiming" of the deceased and to be in law a felony, the charge might be one of murder. Otherwise we may take it as a general proposition applicable to the question that "the essential feature in manslaughter is the unlawful (as opposed to felonious) doing of an act, or culpable neglect of a duty whereby the death of another is caused."[3] The word "unlawful" to lawyers does not mean necessarily the same as "illegal" or "criminal." Carnal knowledge, for example, of a woman or girl by a man not married to her is "unlawful carnal knowledge," but is contrary to law and punishable only in certain circumstances. The question therefore would seem to be whether any operation performed by a surgeon is to be deemed lawful, to which the wish of the patient, backed perhaps by the consent of his or her relatives, has been given. Lord **RIDDELL** would answer in the negative, having considered the matter in the light of the law, as laid down by various authorities, and we believe him to be right. He has dealt in particular with the question of deliberate sterilisation, whether of those mentally and physically sound, or of those mentally defective or diseased persons who are likely to produce undesirable citizens. He looks upon the medical welfare of the patient as the test to be observed, and believes an operation, the sole object of which is to prevent the subject of it from having children, to be clearly illegal. In the discussion which followed Lord **RIDDELL**'s paper, prominence was given to the narrower topic of the sterilising of the mentally defective, and reference to our report will show that among those that spoke Sir **WILLIAM WILLCOX** and Prof. **LOUISE MCILROY** declared themselves against the recognition of such an operation as desirable; Sir **CHARTERS SYMONDS** urged that the public had a right to express an opinion on the subject, his own view being in favour of the establishment of the practice. None of them suggested that such a thing could be done in the present circumstances merely with the consent of the relatives, coupled perhaps with such consent as the patient might give. Parliament, we would add, might conceivably consider a Bill on the subject, but although everyone admits that the production of children by the mentally defective and other undesirable parents is prejudicial to the public welfare, it is, to say the least, doubtful whether public opinion, either now or in the near future, would sanction compulsory measures to render it impossible. And if public opinion would condemn the sterilisation of human beings in order to prevent the procreation of diseased offspring, it would presumably disapprove of the sterilisation of the healthy to suit their whim or their convenience.

The fact, however, that mentally defective persons cannot give a valid consent to anything on the face of it detrimental to themselves, places their case outside the general class of unnecessary operations, which a surgeon may be asked to perform upon persons able to decide for themselves and to indicate their wishes. The test there appears to be in law, whether the operation is or is not prejudicial to the public good. The individual may wish a certain thing to be done upon his body which, he thinks, will affect himself alone, but it may be contrary to public policy, if it renders him a less whole-bodied citizen. With this view the medical profession should wholeheartedly agree. It was held many years ago that "mala praxis is a great misdemeanour and offence, whether for curiosity or experiment or by neglect, because it breaks the trust which the party has placed in the physician tending directly to his destruction."[4] What Dr. **GROENVELT** did in this case is not recorded, but the "trust of the party" in the physician suggests the question whether a great trust is not placed in the medical man by the State when it confers on him certain privileges in virtue of his qualifications. It is submitted that the duties and rights assigned to him, from which others are excluded, were not devised merely as a reward for the acquirement of a prescribed amount of mental and manual dexterity, but in order to secure for the nation skilled treatment in time of physical need. It is not intended that skill so recognised by the State should be employed for gain, or even gratuitously, without there being any condition in the subject of its employment to demand it. The performance by a surgeon of an unneeded operation, appreciably injurious to the human body, at the request of an individual, should therefore be looked upon as contrary to public policy, and Lord RIDDELL appears to have demonstrated that it is also illegal and, in conceivable circumstances, punishable.

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[1] THE LANCET, April 25th, p. 899.

[2] Hawkins: Pleas of the Crown, vol. i., p. 265.

[3] Denman's Digest of Indictable Offences, p. 386.

[4] Dr. Groenvelt's Case, 1 Ld. Raymond, 213.

LESSONS OF A FOOD POISONING OUTBREAK.

THE outbreak of illness following the mayoral banquet at Portsmouth last November, like the similar outbreaks at Winchester and Southampton in 1902, has been traced to oysters. The epidemiological side of the outbreak was worked out with great care by Dr. A. MEARNS FRASER, the medical officer of health, and a careful analysis of the food eaten incriminated the oysters. Of the 83 persons who were promptly ill 82 had partaken of oysters, while the remaining guest who ate them was ill subsequently with an attack of diarrhœa lasting five days, but this was not until 14 or 15 days after consumption. 135 persons were present at the banquet, so that 61·5 per cent. suffered from some degree of illness within the next few days. In most cases the symptoms experienced were of the ordinary food poisoning type, such as diarrhœa, colic, vomiting, headache, feverishness and malaise. The incubation period is not set out in detail, but five were ill the same night, 35 next day, and 31 on the day following. Three of the cases are stated to have developed definite attacks of paratyphoid fever of a severe type. None of the oysters was available for bacteriological examination, but the layings from which they were said to have been obtained were ascertained and oysters from these layings were examined by Prof. J. W. H. EYRE. Those from one laying were reported contaminated, and Dr. FRASER remarks that the bacteriological results indicate, according to the standard now generally adopted, that such oysters are not fit for consumption, and would not be allowed upon the London markets. The oysters eaten were brought to the table direct, without having been relaid.

Unfortunately, the outbreak was very inadequately investigated on the bacteriological side, so that it is not possible to arrive at any conclusion as to the nature of the infection. As usual, none of the infected food eaten was available for examination, but no bacteriological examinations of materials from patients seem to have been carried out. A study of the symptoms and of the outbreak generally suggests infection with a living bacillus of the Salmonella type. An examination of excreta samples, and particularly of serum from a number of the cases, would probably have been adequate to settle the diagnosis, or at least to refute this probability. Agglutination tests, using the appropriate strains, of blood from patients have proved valuable in other outbreaks, and these could have been taken a week or more after the event. Three cases are definitely reported as paratyphoid fever, and while this appears likely from the clinical course, the bacteriological data are inconclusive. If, as appears probable, the outbreak was due to some Salmonella strain such as *B. aertrycke*, these cases would give a positive Widal agglutination reaction with *B. paratyphosus* B, and a differential diagnosis could only be made by the use of special specific type strains or by absorption tests. The exact nature of these outbreaks of illness from shellfish is still obscure, and it is somewhat unfortunate that more complete steps were not taken to utilise this outbreak to throw light upon the obscurity.

In addition to the importance of detailed bacteriological investigation of all food poisoning outbreaks, particularly of abnormal type, if they are to be prevented in the future, this outbreak also again directs attention to the need for more supervision over oyster beds. Dr. FRASER, discussing the prevention of future outbreaks, suggests that the remedy lies with the individual, and not with the health authority, and that the one safeguard of the public is to purchase oysters only from firms which guarantee their oysters to have been supplied from layings which have been inspected and approved by a competent authority. This seems rather hard on the individual and particularly inapplicable to the present outbreak, since each guest could hardly demand a health certificate with the oysters put before him. While this may be the only protection under existing conditions it is an unsatisfactory protection. Public health administrative machinery exists to protect the individual, and the proper course would seem to be only to allow oysters to be sold from layings which have been registered with and approved by an appropriate authority, or if the oysters have been relaid in approved places. This would require an alteration in the present law.

THE ANATOMICAL DISTRIBUTION OF OCCUPATIONAL CANCERS.

IT has long been known that in chimney-sweeps cancer of the scrotum is particularly frequent. The important work of Dr. ALEXANDER SCOTT[1] on the occupation dermatoses of the paraffin-workers of the Scottish shale-oil industry, which is based on clinical observations extending over 24 years and for the publication of which we are indebted to the Imperial Cancer Research Fund, has revealed a similar selectivity of the anatomical site of "paraffin cancer." Here a curious difference has been noted by Dr. SCOTT. Those men who come most into contact with the paraffin oil develop on the arms and hands diverse forms of dermatitis, which may eventually develop into carcinoma, while cancer of the scrotum is relatively rare. Thus, out of 19 cases of carcinoma, 12 were on the hands and arms and only three on the scrotum. But cancer of the scrotum occurs with relative frequency among workmen in other departments of oil-works, although these men are not engaged in occupations which entail prolonged contact with or handling of oil. It affects particularly those men who, as retort men, labourers, or stillmen, come into contact with ash, coke, dust, or other gritty material. Thus in 46 cases of cancer occurring among such men, 28 were cancer of the scrotum. Another difference is that this type of cancer is not preceded by warts or papules, but arises as a primary lesion. This problem of the anatomical site of the lesion forms the subject of a recent paper by Dr. E. L. KENNAWAY[2] entitled the Anatomical Distribution of the Occupational Cancers, in which he presents a valuable collection of statistical data covering the various occupational cancers. All these conditions present a definite site of election. Thus two-thirds of all the pitch cancers occur either in the cheek, lip, and eyelid or on the scrotum, while other parts which are quite as much exposed to pitch dust, such as hand or fingers, are but very seldom affected. In the closely related cancer due to soot—i.e., chimney-sweep's cancer—only the skin of the scrotum shows a special liability to cancer, while cancer of the face and neck is rare. Thus out of 29 fatal cases of cancer in chimney-sweeps, 27 were on the scrotum and only two on the face and neck. In mule-spinners the scrotum is, again, the site of election, although the penis and a wide area of skin on the abdomen and on the thighs is equally exposed to the action of oil. In aniline-dye workers cancer develops almost always on the bladder and on the posterior wall of it; the kidneys and ureters are only rarely affected. In persons taking arsenic it is the fingers, legs, and the trunk which are the most frequent site of cancer, while the head, neck, and scrotum were affected in only 23 per cent. of all cases.

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[1] Eighth Scientific Report of the Imperial Cancer Research Fund, London: Taylor and Francis. 1923. P. 85.

[2] E. L. Kennaway: Jour. Indus. Hyg., 1925, vii., 69.

For some of these curious phenomena a plausible explanation is suggested. Thus the restriction of the lesion to the bladder in aniline workers may be due to the carcinogenic substance being produced in the bladder from a precursor secreted by the kidneys in the urine. Again, Dr. KENNAWAY has shown that some organic substances which by themselves do not produce cancer experimentally acquire this property when passed through a red-hot tube, so that aromatic condensation products are formed, and this might explain why the workmen in oil-works who come into contact with the heated distilled products are particularly liable to be affected. But the particular liability of the skin of the scrotum to certain forms of occupational cancer remains a mystery. Neither the rugosity of the skin, which is usually given as an explanation by assuming that it facilitates the collection of dirt between its folds, nor the abundance of sebaceous glands affords an adequate explanation. In such occupations as coal-miners and agricultural labourers cancer of the penis is much more frequent than cancer of the scrotum, while in occupational cancer the ratio is reversed. It cannot even be maintained, therefore, that the skin of the scrotum is more liable to cancerous degeneration. In fact, for some countries (China, Ceylon) where cancer of the penis is relatively common, no records of cancer of the scrotum have as yet been obtained. It is desirable, therefore, that in all statistical statements cases of cancer of the scrotum and of the penis should be recorded separately and not be included under any common heading, for they seem to be quite different in origin. This is a good illustration of the great variety of factors concerned in producing the same pathological entity, epithelioma, in closely related anatomical positions.

The paper is full of valuable statistical data, and they are presented in such an interesting way as to make the dry bones of statistics live. The narrative reads almost like a detective story, but one in which the detective gets decidedly the worst of it. It is, no doubt, only the first instalment of a serial which will not come to an end before the culprit is brought to book. Perhaps the clinical observations of Sir LENTHAL CHEATLE on the relation of innervation to cancer, which have quite recently received experimental confirmation by the work of Dr. W. CRAMER,[3] may offer a clue.

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[3] W. Cramer: Brit. Jour. Exp. Path., 1925, vi., 71.

Annotations.

"Ne quid nimis."

FINE POINTS AND FIRST PRINCIPLES.

A COMPELLING candour causes us to recognise that the principle that public expenditure involves public control is not always remembered by those of us who tread the thorny paths of criticism. We are forcibly reminded of the fact from time to time by the Minister of Health and his advisers in connexion with the administration of the National Health Insurance Act, and Dr. R. A. Bolam and his colleagues appearing before the Royal Commission this week and next are under no illusions on the subject. There is another principle which is to be found amongst those scheduled as fundamental in the official statement of evidence being put before the Commission on behalf of the medical profession. It avers that with the administration of any health insurance scheme medical representatives must be closely associated. We have one or two comments to make on this subject in relation to the evidence of the society, familiarly known as the NIBS.

The N.I.B.S., or National Insurance Beneficent Society, has placed before the Commission the information and statement of its views which we summarise in this issue. One of the joint secretaries, Mr. P. Rockliff, is in another capacity the secretary of the Joint Committee of Approved Societies, and is spokesman for a very considerable body of approved society opinion. We confess to some impatience with the implications in the evidence of the Beneficent Society that the actions and motives of professional men are governed by sordid considerations, from whose direful effects on the simple-minded insured person the society stands ready to offer the protection of its beneficent wing. These implications are to be observed in the references to the transfer of a fee from the pocket of the needy claimant for dental benefit to the pocket of the doctor giving the requisite certificate, and to the proposed fee of 1 guinea to an ophthalmic surgeon for an examination for spectacles on the mere 5 per cent. chance of a serious disease of the eye, and in the suggestion that the dental profession would put before the Commission a Machiavellian scheme. This scheme, apparently, in the fair garb of economy, would limit dental benefit to extractions and so produce a toothless membership of approved societies, who would then be forced to clamour for dentures, cost what they may. Such a conception of the attitude of professional opinion towards health insurance developments is not calculated to remove that distrust of lay control—and especially of approved society control—which was so deep-rooted when, in 1911, the medical profession determined that, so far as medical benefit was concerned, they would not have it, at any rate without a powerful dilution of medical representation. The very large body of society opinion in favour of devoting surplus funds to "treatment" benefits rather than "cash" benefits renders it of increasing importance to see that the principle embodied in Section 14 of the National Health Insurance Act, 1911, in regard to benefits "in the nature of medical benefits," is not lost sight of; such benefits are to be excluded from administration by approved societies. It is just that principle which the constitution of the National Insurance Beneficent Society appears to controvert.

We have referred to the protecting wing of the society. It has in fact two wings. With the technicalities by which its incorporate side and its unincorporate side are created we are not concerned. Nor are we entitled to complain that it has been found possible within the limits of one or more Acts of Parliament to construct a charitable body to which societies and their members may subscribe, and a piece of machinery which enables approved societies, through an agent, to administer treatment benefits, unless we wholly misconceive the content of the word "administration." We can, indeed, allow ourselves to admire the ingenuity of the scheme. What concerns us most is the fact that out of the surpluses of approved societies, treatment benefits—which are "in the nature of medical benefit"—are in danger, to an increasing extent, of being administered in a way contrary to the intentions of Parliament. While the NIBS may not inappropriately be concerned with fine points, we are a little more concerned with the application of first principles.

EARLY MOVEMENT AFTER ARTHROTOMY AND ARTHROPLASTY.

Writing in the *Presse Médicale* of April 1st, Dr. E. Desmarest discusses the lessons learnt from operating on three cases of ankylosis of the knee by the method of arthroplasty with free fascia-flaps. He lays stress on the importance of operating as early as possible after active disease has ceased, for the reason that muscular atrophy from disuse constitutes a very serious drawback to functional recovery. The very fact of the success of the operation, when strong and active muscles are able to control the joint in the complete absence of the usual ligaments, is evidence of the importance of a consideration of the state of the muscles. Dr. Desmarest follows Murphy more than Putti in his operative technique, prefers a U-shaped incision, and either divides the ligamentum patellæ or detaches it together with a thin scale of bone from its attachment to the tibia. Early massage and active movement he considers essential if a good result is to be attained. The patient should be encouraged to begin active movements in the joint almost as soon as he recovers from the anæsthetic. Dr. Desmarest gives as contra-indications to arthroplasty damage to the muscles of the thigh from osteomyelitis, old septic war injuries, with muscular atrophy and lesions of motor nerve trunks. Ankylosis from tuberculous disease is not suitable and the extremes of life should be avoided. In a communication to the *American Journal of Surgery* for March, Dr. Allen O. Whipple, of New York, strikes a like note in discussing the after-treatment of cases of arthrotomy. When this operation has been performed for loose bodies, displaced menisci, or acute non-purulent synovitis, the author strongly advocates early active movements as having a most beneficial influence on the end-result. But where large incisions have been made more caution and considerable delay are advisable. If considerable trauma has been necessary in the joint surface or structures, or if there are hypertrophic arthritic changes, immobilisation for a variable time is indicated, as it is in cases of great relaxation of the capsule.

ROEHAMPTON HOUSE.

Old buildings do not, as a rule, make good hospitals, but Roehampton House, the extensions to which will be opened by the Queen on Wednesday next, May 6th, holds a place of its own in hospital history and economy. It had already stood, facing Richmond Park, for more than two centuries when in June, 1915, it became one of Queen Mary's Convalescent Auxiliary Hospitals. This stately and distinctly pleasing house was designed for a certain Mr. Thomas Cary, of whom next to nothing is known, by Thomas Archer, one of the aristocratic amateur architects of his day, who almost at the same moment was at work upon what is admittedly his most admirable achievement, the Church of St. Philip at Birmingham, which has now been raised to cathedral dignity. The influence of Vanbrugh is visible in both buildings, and Sir James Thornhill was brought to Roehampton to embellish a part at least of the interior. Apparently he did not get beyond the room over the entrance hall, but with that he dealt very thoroughly, painting the ceiling with the Feasts of the Gods, and covering the walls with landscapes. This work, which still endures, is not matched elsewhere for, in the main, the house is plainly panelled in painted deal. Roehampton House has had many owners and tenants, among them Dr. Markham, Archbishop of York, and latterly it was the abode of the Earls of Leven and Melville, by one of whom it was sold to Mr. A. M. Grenfell, who called in Sir Edwin Lutyens to make additions to it which nearly trebled its size, but the hospital was established there before he was able to decorate the interior of the new portions. For the immediate purpose of the hospital—the replacing by artificial means of the lost limbs of men maimed in the war—a number of wooden huts were erected, most of which have now been superseded by permanent wards of brick. There are five of these wards, each of which contains 40 beds—low, verandahed buildings connected by covered corridors. They face south and have for prospect a pleasant lawn. An operation block with two theatres and wards for electro-therapy form part of the new equipment, and in another corner of the grounds are the workshops which are busily turning out those cunningly articulated limbs which we have now learned to make with such astonishing skill and ingenuity. The inmates of the Special Surgical Hospital at Shepherd's Bush have been, or are in process of being, removed to the infinitely more restful and agreeable verge of Richmond Park, where there will be room for between 1100 and 1200 of them. Queen Mary's Convalescent Auxiliary Hospital at Roehampton will, however, no longer exist exclusively for the good of ex-soldiers and sailors. Men who are injured in limb on the railways will also be treated there, and, no doubt, eventually the victims of mining and other dangerous trades likewise. It may safely be claimed that, for its special purpose, there is no hospital in the world which excels Roehampton House, and probably nothing that equals it.

SANOCRYSIN IN TUBERCULOSIS.

Recent reports from Denmark show that there too[1] the treatment of tuberculosis with sanocrysin is still in the experimental stage, and that such important matters as the dosage and the selection of suitable cases are still in debate. With regard to the dosage, there seems to be a general tendency towards giving smaller quantities and spacing them with longer intervals than those recommended by Prof. Mollgaard. The history of krysolgan treatment—the gold preparation which figured so largely in German medical publications a few years ago—shows the same downward graduation of the dosage in response to cases of serious poisoning, and it may be that krysolgan fell into disuse partly for this reason. In the case of sanocrysin it appears that such doses as 1 and 1·5 g. have been found often to be too toxic, both on account of the "tuberculin" action of the drug, and also because of direct metallic poisoning, the signs of which closely resemble those of sublimate poisoning. In some institutions in Denmark the initial dose of an intravenous injection has been reduced to 0·125 g. and even to 0·05 g. An interval of a week is sometimes allowed even when there is no severe reaction, and much caution is exercised in increasing the dosage. It has been argued that small doses at long intervals are dangerously timid; the vulnerability of the tubercle bacillus to the drug may, it is said, become lost. But on this point we have assuredly not yet heard the last word, and at present we do not even know with certainty what processes are at work when tuberculous tissues react to sanocrysin. It is, indeed, doubtful if the good effects hitherto achieved are due solely to the direct action of sanocrysin on the tubercle bacillus as studied in vitro. At all events there can no longer be any doubt that many of the ill-effects following an intravenous injection of sanocrysin are due to gold poisoning, pure and simple, and in a recent publication Dr. O. Scheel[2] has recorded a fatality of considerable interest in this connexion. The patient was a woman who died two days after the fourth injection of sanocrysin, of which a total of 3·5 g. had been given. Shortly before death she suffered from anuria and cyanosis, but there was no fall of temperature, nor evidence of a focal reaction in the lungs. The post-mortem examination showed hyperæmia of the colon, hæmorrhages in the small intestine, and severe parenchymatous disease of the kidneys. The absence of a fall of the temperature and of clinical signs of œdema of the lungs suggests that this was not a case of sanocrysin or "tuberculin" shock, but rather one of direct gold poisoning. Other interesting observations on patients undergoing sanocrysin treatment indicate that allergy is reduced, the rate of sedimentation of the erythrocytes is hastened, and a considerable reduction of the hæmoglobin in the blood occurs. Considering how little is yet known about the dosage of sanocrysin and the indications for its exhibition, it would be premature to pass judgment on its efficacy. It is on record that patients undergoing this treatment have died, not merely in spite of it, but because of it. It is also on record that patients have responded with dramatic success; febrile, debilitated and emaciated, they have in a few weeks been restored to practically complete health. Even in the hospitals in which experience has been gained, uncertainty still exists as to the prognosis of any case submitted to this treatment.

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[1] See Preliminary Report by the Medical Research Council, The Lancet, April 18th, p. 833.

[2] Tidsskrift f. d. Norske Lægeforening, March 15th.

WHOLE MILK IN INFANT FEEDING.

WHILE experts argue about percentage feeding and caloric values and this milk and that milk, the general practitioner remains rather bewildered, knowing as he does that the public is rather unimpressed by all the scientific jargon and that infants continue to thrive despite the use of foods which are denounced by the laboratory worker and the children's physician alike as dangerous and monstrous productions. Nevertheless, there is great value in a frank discussion between experts of what appears on the surface to be a relatively simple problem—namely, "Is the modification of cow's milk necessary in infant feeding?"—and this formed the subject at a meeting of the Section for the Study of Disease in Children of the Royal Society of Medicine on Friday, April 24th. Dr. Leonard Findlay made a strong case for the use of whole cow's milk, although he admitted that even he believed in the modification brought about by boiling, which he considers essential in view of the impossibility of our ever obtaining an absolutely pure milk-supply. He discussed in the first place the differences between breast-milk and cow's milk, pointing out that each of the constituents had been singled out in turn as presenting sufficient divergences to warrant modification. The problem appeared to him to be much more subtle than the mere question of the relative differences of protein, for example, in the two milks, for the real difficulty here probably lay in the essential amino-acids rather than in the particular form in which they are presented in the two milks, and any dilution of cow's milk opened up the danger that certain amino-acids might be so reduced in quantity as to give rise to disturbances in growth, just as the dilution frequently practised so reduced the iron intake of an infant as to produce anæmia. The available proof that an infant is unable to digest whole milk is to Dr. Findlay not convincing, and on the other hand, certain metabolism experiments on marasmic infants had shown that these babies had no difficulty in dealing with cow's milk. His clinical experience had gone to show that a vast majority of children digest and thrive on whole cow's milk, excluding cases where definite infective conditions of the digestive tract were present. Dr. Findlay, in short, considers that the differences between cow's milk and human milk present such a fundamental and subtle problem that the attempt to "humanise" cow's milk cannot possibly succeed, and that boiled whole milk gives better results than any modifications in all except the very youngest infants. Dr. Hugh Thursfield supported the use of boiled whole milk, stating that on purely clinical grounds it had proved to be the best substitute for breast-feeding in the healthy infant.

The case for the modification of cow's milk was presented by Dr. Eric Pritchard and Dr. R. C. Jewesbury. They brought forward the argument that breast-milk is the best food for infants and that any substitute should approximate as closely as possible in composition to breast-milk. Hence, best results were to be expected and were obtained at their hands by modifying cow's milk so as to make it as similar as possible to human milk. Dr. Pritchard pointed out that the problem is not the simple one of dealing with the protein, fat, and carbohydrate so as to obtain these three elements in correct proportion, but the much more complicated one of adjusting the relative proportions of all the 30 different elements of milk, each of which plays some part in metabolism. He pleaded for some biochemical Darwin to correlate all the vast amount of investigation carried out in this field. The problem had not been solved by the simple dilution of milk, any more than it had been solved by giving undiluted milk. The excess protein contained in cow's milk was, in his opinion, dangerous both for its immediate effects in leading to fermentation and the absorption of the toxic products of this process, and also for its remote effects, such as those produced in the liver and kidneys by the extra burden thrown on them and those taking place in that "long-suffering organ, the stomach" by the excessive acid production necessary for the digestion of cow's milk. Dr. Jewesbury also drew a gloomy picture of the results of high protein feeding, describing the clinical signs of restlessness, sleeplessness, constipation, colic, and flatulence, which he believes are all caused by too much protein, and he adduced the excellent results obtained by the simple modification of cow's milk along the lines introduced by Sir F. Truby King. Dr. H. C. Cameron uttered a warning against the taking of a rapid increase in weight as a proof of the success of one or other method of infant-feeding. He looks upon most artificial feeding as in the nature of "sighting shots," and the object of the physician should be to discover the best sighting shot. The general conclusions which arise from this discussion appear to be that for the healthy infant boiled whole cow's milk is as successful as any other food and that for the wasting baby different schools still believe that their methods are the only successful ones. The wide differences of opinion which appear to exist, however, are more likely to be modified by discussions of this nature, and perhaps the public may one day get a unanimous answer to its ever-persistent inquiry, "How are we to feed our babies if we can't breast-feed them?"

THE DIAGNOSIS OF HYDATID DISEASE.

IT is in Australia where hydatid disease is comparatively common that investigations of the serological reactions occurring in this disease can be carried out over a sufficiently large number of cases to make the results of great value. At the Australian Medical Congress of the British Medical Association held in Melbourne in November, 1923, Mr. Horace R. Dew and Miss F. Williams contributed a valuable paper on this subject, now republished in the Transactions of the Congress.[1] They report the results of three years' work on the immunity reactions occurring in hydatid disease. The three tests which have been carried out are the complement-fixation test, the precipitin test, and the intradermal test of Casoni. In the complement-fixation test the antigen used is fresh hydatid fluid and the test appears to be absolutely specific, giving a positive reaction in 80 per cent. of all cases of hydatid disease. Certain cases with thick-walled cysts, barren of scolices, and dead cysts which have undergone fibrosis or calcification fail to give a positive complement-fixation reaction, and in certain other cases some failure of the immunising mechanism is also thought to be a factor in the failure of the test. Hydatid disease in children, in which daughter cyst formation appears to be uncommon, and similarly hydatid disease of the lung, where daughter cysts are frequently absent, also give a negative result. An attempt is being made to obtain antigens of greater sensitiveness for these cases, and the merits of an alcoholic extract of scolices from hydatid cysts of the sheep and of a saline solution extract of scolices which have been digested with trypsin are being investigated. The precipitin test is carried out with fresh hydatid fluid from the sheep and unheated serum from the patient; it runs parallel with the complement-fixation test, is equally specific, and is influenced by the same factors. In its present form, however, it is not so delicate, nor is it quantitative in the same way as the complement-fixation reaction. The "intradermal test of Casoni" consists of the injection into the skin of 0·4 c.cm. of hydatid fluid obtained from the sheep and filtered through Berkefeld filters. The commonest positive reaction consists of the appearance of a wheal at the site of injection within about 20 minutes. Within 12 hours an area of erythema and swelling appears around this which spreads until a large area is involved. This is itchy but not painful, persists for 48 hours, and the wheel disappears with its appearance. There is no general reaction. There are certain variations of this; for example, the whole reaction may be over in a few hours, or there may be a long gap between the appearance of the wheal and the occurrence of the erythema. The test is absolutely specific, but needs careful interpretation and control. This test appears to be of particular value in the detection of uncomplicated cases of hydatid disease before operation. The immunological phenomena occurring in this disease are of great interest, and the combination of these three tests will, according to this recent work, enable at least 90 per cent. of cases of hydatid disease to be diagnosed.

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[1] Australian Medical Congress: Transactions of the First Session, Melbourne, 1923. Sydney: Sydney and Melbourne Publishing Co. 1924. Pp. 552.

DETERMINATION OF FALLOPIAN PATENCY.

TRANSUTERINE insufflation of oxygen or carbon dioxide gas combined with roentgenography is the ingenious method devised by Rubin, in 1919, to test the anatomical patency of the Fallopian tubes. Since that date the procedure has been extensively adopted in America with apparent success, but does not appear to have received the same support in this country, although Mr. Victor Bonney recently described in our own columns[1] a simple form of inflation apparatus and what may be learned by its use. In normal cases a measured quantity of gas is introduced into the peritoneal cavity, an artificial pneumo-peritoneum establishing definitely the patency of one or both tubes. In a recent paper,[2] based on an analysis of 1000 consecutive cases, Rubin concludes that the most advantageous time to perform the test is the fourth to seventh day after the completion of the last regular menstrual period. As is well known from the work of Hitschmann and Adler, the endometrium at this stage of the menstrual cycle has shrunk to its minimum thickness and is relatively quiet; the glands have collapsed and ceased to secrete. Theoretically, therefore, during the post-menstrual interval there should be less mechanical resistance to the passage of the gas, and Rubin has found by actual manometric readings that this is so. The risk of endometrial dislocation, air embolism, and the carrying of infection should be reduced to a minimum; neither should there be any chance of disturbing an early and unrecognised pregnancy. The method is considered to be free from danger in properly selected cases, but clinical and experimental observations have pointed to the advisability, in any event, of not exceeding a pressure of from 200 to 250 mm. of mercury. Higher pressures have been employed by experienced hands in the attempt to open tubes that have been previously demonstrated to be stenosed or closed.

SOCIETY FOR RELIEF OF WIDOWS AND ORPHANS OF MEDICAL MEN.

THE report for the year 1924 will be presented at the annual general meeting of the Society on May 6th. Since the last report 17 new members have been elected and 9 have died. The Society at the present time consists of 1 honorary, 156 life, and 141 ordinary members. The invested capital now stands at £148,650; in conformity with the by-laws only income may be used for the payment of grants and expenses. The income from investments amounted to £4786, £350 were received from subscriptions and donations, £68 from life subscriptions, and £600 from legacies. The working expenses were £360. During the year 5 widows died and 4 came on the funds; on Dec. 31st there were 51 widows and 7 orphans in receipt of grants. The grants to orphans on the Brickwell Fund were increased by £10 per annum, making the annual grant to each orphan from this source £25. The Christmas present to the widows was also increased, those over 75 years of age receiving £20 each and those under 75 £15 each; in previous years the Christmas present to the widows had been one of £10 each. One of the widows who had died had been on the funds since 1847; her late husband paid in subscriptions £37 16*s.* and his widow received in grants £3250; another whose husband had paid £12 12*s.* received in grants £1885. The Society, which was founded in 1788 and incorporated by Royal Charter in 1864, is open to any registered medical practitioner who at the time of his election is resident within a 20-mile radius of Charing Cross. Relief is granted to the necessitous widows and orphans of deceased members of three years' standing and of life members. The annual subscription for a member who at the time of his election is under 40 years of age, is 2 guineas, if over 40 but under 50, 3 guineas, and if over 50, 4 guineas.

TOBACCO AMBLYOPIA.

IT must often have occurred to those in charge of ophthalmic clinics to wonder why some patients fall victims to the toxic effects of nicotine so much more readily than others. It is not so very uncommon to find patients undoubtedly suffering from toxic amblyopia who tell you that they smoke no more than two ounces of shag a week, while others can stand far greater quantities up to an advanced age without any obvious ill-effects on the sight. Though the symptoms of tobacco amblyopia are characteristic—especially the paracentral scotoma—it is perhaps comparatively seldom that tobacco alone is responsible. Of other contributing factors the influence of alcohol is not likely to be overlooked. That of gastro-intestinal sepsis and of diabetes must also be borne in mind. Another possible factor is emphasised by Prof. G. E. de Schweinitz in a paper recently read before the Section of Ophthalmology at the College of Physicians of Philadelphia[1]—viz., senile changes in the optic nerve which may themselves be capable of causing a certain degree of optic atrophy, not necessarily progressive. These senile changes may depend on alteration of the small blood-vessels within the optic nerve itself; they may, on the other hand, be caused by the pressure of an arterio-sclerotic carotid artery or ophthalmic artery on the nerve; or, again, they may be due to changes in the nerve itself recently described by G. Fuchs, who found amyloid bodies developing from the neuroglia which were damaging and displacing the nerve bundles. These considerations may serve to explain the apparent difference in the capacity of different patients to resist the poison of nicotine, and also the fact that while abstinence from tobacco in most cases is followed by complete restoration of vision, in others the cure is at best but partial.

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[1] THE LANCET, 1924, ii., 1062.

[2] Journal of the American Medical Association, Feb. 14th.

[1] Therapeutic Gazette, Feb. 15th, 1925.

THE LATE PROFESSOR O'SULLIVAN.

SHORTLY after the death, last year, of Dr. A. C. O'Sullivan, professor of pathology in the University of Dublin, a committee was formed to collect funds in order to perpetuate the memory of his connexion with Trinity College and especially with the School of Pathology, of which he was for nearly 30 years the head. Over £1000 has been collected and with this sum a scholarship has been founded in the School of Physic. The O'Sullivan scholarship, valued at about £18 a year, is to be awarded, on the nomination of the School of Physic Committee without examination, to the most deserving candidate, consideration being given to his record in the medical school, in the University generally, and also to his financial circumstances. In addition to the foundation of the scholarship a bronze tablet has been erected in the School of Pathology which bears the following inscription :—

Alexandro Carlo O'Sullivan
Huius Collegii Socio
Qui in Hac Schola Scientiae Pathologicae Cathedram
Primus Obtinuit
Viro Magnanimo Omniumque Artium Capacissimo
Lugens Universitas
Hoc Monumentum Posuit
MCMXXIV.

The tablet was unveiled by the Provost of Trinity College on April 21st, when Dr. W. G. Smith, emeritus professor of materia medica, on behalf of the subscribers, presented the scholarship and tablet to the College.

SIR JOHN MACALISTER.

WE announced last week the resignation of Sir John MacAlister from the post of Secretary to the Royal Society of Medicine, which he has held since the foundation of that Society by the amalgamation of its constituent bodies. At the meeting of the Council of the Society last week the following resolutions were proposed from the chair by the President, Sir StClair Thomson, who said that no formal resolutions could be too generous in making public acknowledgment of the affection felt towards MacAlister, and the regret which all had experienced on realising that his state of health compelled his resignation. The following are the resolutions submitted :—

1. That the Council of the Royal Society of Medicine desires to express its profound regret that ill-health has compelled Sir John MacAlister to resign his office of Secretary, which he has held since the year 1887. In accepting his resignation the members fully realise that the Society as at present constituted owes its creation to his organising powers; that its growth and success are chiefly due to his zealous devotion to his duties; and that its welfare and reputation have been his life's work.

2. That the Council unanimously offers its most sincere thanks to Sir John MacAlister for his 38 years of ungrudging and loyal service to the Society.

3. That the Council sends its affectionate good wishes for Sir John MacAlister's restoration to health and vigour.

4. That the Council has great pleasure in inviting the Society to elect Sir John MacAlister as an Honorary Fellow of the Society.

Sir StClair Thomson went on to recall MacAlister's three great achievements in connexion with the Society. The first, he said, was the move of the old Medico-Chirurgical Society from Berners-street to a building in Hanover-square, large enough to house it, to lodge its increasing library, and to supply meeting rooms to many kindred societies. The second was the federation of these 18 societies into the Royal Society of Medicine, the largest society of its kind in the kingdom, and with the most complete medical library in the Empire. The third great feat was the erection of the Society's house in Wimpole-street, the move there and the consolidation of success. The words of Sir StClair Thomson and the resolutions referring to the work of MacAlister were immediately endorsed by two previous Presidents of the Society, Sir Humphry Rolleston and Sir William Hale-White, and THE LANCET desires to be associated with this tribute to MacAlister's staunch and devoted service to the medical profession. We are informed that Sir John MacAlister feels that he has no longer the vigour necessary to the adequate performance of his duties, but his resignation does not take effect till the end of June, and we hope that, when it has taken place, he will long continue to enjoy his leisure; we are certain that his old friends will frequently see him among them. During MacAlister's absence much of the administrative work has been admirably carried on by the hon. secretary, Mr. W. Girling Ball, whose assistance was warmly acknowledged by the President.

THE BUDGET.

Mr. Churchill's first Budget is both personally and professionally interesting to the medical man. Sixpence off the income-tax will afford welcome relief to practitioners whose income is so largely earned by personal exertion, and the increase in the allowance on earned income from one-tenth to one-sixth will be of special benefit to the increasing number of medical men and women receiving fixed salaries from local authorities. Professional interest centres around the proposals for old age and widows' pensions. It has long been foreseen by medical statisticians, and pointed out more than once by Dr. J. Brownlee in our own columns, that the number of old people in 30 years' time will be vastly greater, possibly twice as great, in proportion to the working population than it is at present. No one but the medical man in an industrial area knows so well what the anxiety of failing means in old age and of the resulting economic pressure on the family circle may mean to the health of the community. Mr. Churchill's proposal will ultimately provide a pension at the age of 65 years for everyone coming at present within the scope of the National Insurance Acts, and will abolish the present restrictions and tests on pensioners at the age of 70. The cost is to be met by a weekly contribution of fourpence a man and twopence a woman in addition to the present rate of health insurance contribution, with further additions after the tenth year, ultimately increasing the man's weekly contribution to sevenpence. At the end of 80 years the Chancellor calculates this scheme will have become entirely self-supporting without any contribution from the State, which in the meantime can recoup itself out of the steadily diminishing cost of war pensions. Pensions of 10s. a week for widows of all men under National Health Insurance will come into force at the beginning of next year, with additional sums for children under the age of 14. The whole scheme is a useful instalment of social insurance which should make for national health.

THE first Lister Memorial Lecture of the Royal College of Surgeons of England will be delivered on Thursday, May 14th, at 5 P.M., by Sir William Watson Cheyne.

INCORPORATED ASSOCIATION OF HOSPITAL OFFICERS. The annual Congress is to be held at St. Thomas's Hospital, London, on Friday, May 15th, when an address of welcome will be given by Sir Arthur Stanley at 10 A.M. The Congress opens with an address by the President, Mr. W. H. Harper, at 10.15, and at 10.30 Dr. F. N. K. Menzies will read a paper on the Rôle of the Auxiliary Hospital or Home of Recovery in the Voluntary Hospital Organisation, Mr. E. W. Morris and others taking part in the discussion. At 2 P.M. Mr. A. G. E. Sanctuary will open a discussion on the Effect of Hospital Savings and Contributory Schemes on Voluntary Contributions, Dr. H. L. Eason being in the chair. At 4 P.M. there will be an official reception at the House of Commons. The annual dinner will be held at the Holborn Restaurant in the evening, and visits to London hospitals are being arranged on the following day. Inquiries may be addressed to Mr. J. E. Stone, Hon. Secretary, 28, Bedford-square, London, W.C. 1.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CXX.—THE TREATMENT OF EXCESSIVE LOSS AT THE PERIODS.

I. WHEN THE UTERUS IS ENLARGED BUT NO FIBROIDS ARE PRESENT.*

General Considerations.

MENORRHAGIA means excessive loss at the menstrual periods, but its occurrence is often not *monthly* because the happenings in the ovary which determine the menstrual flow may occur at shorter or longer intervals than that. As a rule these happenings take place regularly, so that the menstrual flow is regular though perhaps not monthly, but sometimes the ovary itself is "irregular," so that the menstrual flow is irregular too. The term metrorrhagia signifies loss occurring between the menstrual periods and unconnected with those ovarian changes which are the basis of menstruation, and it is therefore necessary to distinguish this form of irregular bleeding from a menorrhagia which, though irregular, depends for its initiation on changes in the ovary. Metrorrhagia is quite independent of such changes, and indeed can, and sometimes does, occur in a woman who has no ovaries. This article deals with menorrhagia only.

Normal menstrual loss passes into menorrhagia so soon as the woman begins to lose more blood than she can afford. In this regard there are great individual differences. Some persons throughout their lives lose each month an amount of blood considerably in excess of the normal and yet without ill-effect, their blood-forming apparatus presumably being equal to the demand. In determining whether a woman has menorrhagia this fact must be taken into account and inquiry made as to the amount she has been accustomed to lose since her menstrual life began. The amount lost is also relative to the patient's physique. A big woman can, other things being equal, afford to lose more than a small woman. It is usual to gauge the blood loss by the number of diapers used during the whole period; thus eight signifies scantiness, 12 somewhere about normal, 16 distinctly too much, 20 undoubtedly excessive, and 30 or 40 "flooding." The rapidity with which the blood is lost must also be taken into account. A woman who uses 12 diapers during a period lasting three days loses much faster than one who uses the same number during a period lasting a week. In some cases, again, a large proportion of the total number are used within the first 24 or 18 hours, so that the loss whilst at its maximum rate is excessive, though the total amount lost is not so. A woman who uses eight diapers in one day is losing too much, even though she only uses 12 over her whole period of five days. The loss may be excessive by too long continuance as well as by too rapid flow, and in the severe cases both abnormalities are coexistent.

The diagnosis of menorrhagia in any given case rests finally on a general survey of the patient herself. If she is losing too much she will be anæmic, at first only immediately during and after the period, but later on continuously. A woman anæmic from whatever cause is obviously unfit to lose any blood at all until her blood content is restored; to her even a normal period is "menorrhagia." Considerations of this sort frequently arise, notably in cases where it has to be decided whether to stop the periods altogether by hysterectomy or adopt some other course, operative or medicinal, with the view of making the loss "normal" again. Where a patient is very exsanguine, as, for instance, in some cases of fibroids, the periods of themselves often diminish in profuseness, and unless the medical attendant takes these facts into consideration he may mistakenly suppose his patient to be improving; whereas relative to her extreme anæmia the monthly loss is just as harmfully excessive as ever it was. Any improvement of the blood content of these patients by medicinal means at once causes the loss to increase again.

When it is determined that the patient is really losing too much, the next step is to seek the cause by physical examination. As far as the uterus is concerned, broadly speaking, one of three conditions will be found: either it will be (1) abnormally large, (2) normal in size, or (3) abnormally small.

Menorrhagia with an Enlarged Uterus.

A large uterus, other things being equal, will bleed more than a small one because the menstrual area is bigger. Sheer enlargement then without any structural disease will cause the loss to be excessive. The size of the uterus varies a little in normal virgin women, but not to any great extent, though I have seen a few cases where the oversize was so marked as to suggest a developmental abnormality, the reverse of the undersized uterus much more commonly met with.

Subinvolution.—The commonest cause of simple enlargement unaccompanied by gross structural disease is subinvolution, and in its lesser degree it is present in many parous women whose wombs remain permanently bigger and whose periods remain slightly but definitely freer than they were before the women conceived. When the failure to return to the normal size is marked, menorrhagia usually accompanies it. The subinvoluted uterus for at least six months after the pregnancy is capable, I think, of being reduced in size by suitable treatment, but after this period the enlargement becomes increasingly established, until eventually certain intimate structural changes take place in its substance which result in one form of the condition known as "fibrosis." The term, however, is ill applied to this class of case, for the primary change is in the nature of a hyaline degeneration of the muscle-fibres to which the apparent overgrowth of white fibres at a much later stage is secondary. A uterus in this condition usually bleeds profusely, and also often presents other abnormalities—e.g., retroversion, cervical laceration, chronic cervicitis, and erosion.

In the treatment of these cases the first point to bear in mind is that for, say, six months after labour there is certainly a fair chance that suitable treatment may cause involution to take place, but after this period the likelihood of the big uterus shrinking becomes less and less. Ergot is the first drug to try and should be given in full doses (ʒi.) t.d.s. from a few days before the period is due until the flow is over. If the loss is very great pituitrin can be given hypodermically once or twice a day. If these fail other uterine styptics are not likely to succeed, but they can be tried. Many of these cases present retroversion as well, and it is important to rectify this, not only because reposition at this period may permanently cure the displacement, but because retroversion delays or prevents involution. Drugs failing, the uterus should be curetted. The results obtained from this operation are best when its application is not too long delayed. If retroversion is present this should be corrected at the same time by manual or instrumental reposition and the temporary introduction of a pessary. Such treatment, if carried out within the first six months, often cures the patient. The pessary, however, should not be worn for more than six months; if at the expiry of this period the uterus retroverts when it is left out the instrument should be abandoned and the patient advised to have the displacement permanently corrected by operative means.

When subinvolution has existed for a long time the chances of curettage benefiting the menorrhagia are much diminished, because the uterine wall has undergone permanent change. In such a case when, after the usual drugs have been tried and failed, curettage is in contemplation the surgeon will be well advised if he tells the patient beforehand that the operation may fail in its intent, adding, however, that it is advisable because there is nothing between it and more drastic measures. If retroversion is present this should be dealt with at the same time by intraperitoneal shortening of the round ligaments and coexistent cervicitis should be met by excision of the inflamed surface and repair, the aim of the surgeon being to leave the parts in as normal a condition as possible in the hope that the degenerative processes in the uterine wall may stop or regress.

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* An article on the Treatment of Excessive Loss at the Periods, when the uterus has fibroids, is normal in size or small, will appear next week.

There are times when the hæmorrhage is so severe that it becomes urgent to relieve it with certainty. In women over 40 years of age hysterectomy is the simplest solution of the problem, but the difficult cases are those in which the patient is relatively young, and removal of the uterus is to be avoided if possible. In such, as an alternative, I have employed abdominal hysterotomy. The abdomen being opened the uterus is incised through its anterior wall until its cavity is opened and the endometrium is then scraped far more thoroughly than can ever be done from below. The handle of the scalpel is a most efficient scraper. Such thorough curetting is often followed by several months amenorrhœa, and in my hands it has proved a successful operation. There is this advantage in opening the cavity of the uterus—namely, that more frequently than would be thought some intra-uterine condition, like a small fibroid or mucous polyp, is discovered, which is the real cause of the bleeding, although its presence was not detectable by other means. When the uterus is considerably enlarged it may be reduced in size by cutting part of it away (utriculoplasty).[1] When doing this operation I used to excise a wedge-shaped portion, cutting through both front and back walls, but I now excise the front wall only so as to keep the suture line on the anterior surface.

There is a further class of case in which it is undesirable to remove the uterus because of the likelihood of making worse an already existent prolapse of the vaginal vault. In such cases I excise the entire corporeal endometrium and suture the rest of the corpus so as to make it into a solid column of muscle tissue. This column is then ventrofixed so as to act as a ligament to keep up the weak vault. This is a good operation.

There are two other ways of dealing with hæmorrhage from a *chronically subinvoluted uterus*—radium and X rays. Radium acts by destroying less or more of the endometrium, and is, in fact, equivalent to curettage, except that it produces more fibrosis. If the destruction is limited to the superficial layers the periods may be lessened in amount, or even temporarily suppressed for several months, as after hysterotomy and curettage. If the destruction is complete permanent amenorrhœa is effected. Totally to destroy the endometrium a considerable exposure is required, but on account of its varying thickness it is impossible accurately to gauge the exposure required to do this, and, moreover, there is a degree of danger in procuring an effect so drastic. Where the uterus is definitely enlarged I hold that radium is not the treatment of choice, and still less so if, in addition, displacement or chronic cervicitis and erosion are coexistent. With a normal sized uterus, or one smaller than normal, the indications for its use are stronger.

X ray treatment in these cases is as much to be condemned as it is in cases of fibroids, under which heading I will refer to it more particularly.

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[1] Arch. Middlesex Hospital, 1910, vol. xviii.

Special Articles.

NOTES ON SOME PHYSIOLOGICAL PROBLEMS OF MOUNT EVEREST.

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I. GLACIER LASSITUDE.

IN dealing with the physiological difficulties of the Mount Everest Expedition, 1921, Major Hingston,¹ the medical officer, drew attention to what he termed glacier lassitude. To quote his own words:—

> "A distinct feature in the Mount Everest region is the very pronounced glacier lassitude which develops over tracts of ice. This was most marked on the Rongbuk glacier, especially when passing through a trough in the ice at an altitude of 20,000 feet. The trough was a remarkable feature, being girt on either side with walls of ice in many places hewn into fantastic pinnacles and ornamented with pyramidal spires. In this trough there was a peculiar sapping of energy, a weakness of the legs, and a disinclination to move. It was not a breathlessness due to exertion, but to a loss of muscular power. There was a feeling of prostration. One seemed to drag oneself along, instead of going with the usual strength. A profuse sweating was not uncommon. It was something like the oppression experienced when marching through a hot moist jungle in the rains. The lassitude appeared immediately after stepping on to the glacier; it was as quickly relieved on again reaching rock or moraine. It was most noticeable in the absence of wind and in the middle of the day when the sun was strong. It was absent late at evening and in the early morning, and was less marked on cloudy days.
>
> "The cause of this lassitude is easily explained. The conditions for its development are a sheet of ice, a hot sun, and a still air. The sun melts the superficial layer of the ice. The lowest stratum of the atmosphere becomes saturated with moisture but does not rise owing to its being chilled by contact with the ice. Thus, when on the glacier, one is in a saturated atmosphere, and this, in conjunction with the high altitude, is sufficient to cause the unpleasant effects.
>
> "We did not notice that other atmospheric conditions had any special influence on these high altitude symptoms. This was different from my experiences in the Western Himalaya. There, on two occasions, our party climbed the same peak to a height of 18,203 feet. During the first ascent the sky was clear, the air was free from moisture, and our disability was slight. On the second occasion the conditions were different. The sky was dark, stormy weather was imminent, and the atmosphere felt heavy and damp. Our distress on this second occasion was acute. Every few paces found us gasping for breath, and we had repeatedly to make short halts. The same explanation applies to this as in the case of the glacier lassitude. On the second ascent the atmosphere was laden with moisture. The free evaporation of perspiration was checked and, as a consequence, the high altitude symptoms were increased."

Major Hingston thus clearly demonstrates that great lassitude was produced by overheating the body whilst at a high altitude, whereas the altitude alone caused no such symptoms. He does not give any physiological explanation of this prostration. We know already that ordinary discomfort due to overheating is accompanied by an increase in pulse-rate; in fact, it is generally agreed that the pulse-rate is the best indicator of discomfort due to overheating. Major Hingston does not give the pulse-rate of his subjects whilst suffering from glacier lassitude. Altitude itself, as is well known,² increases the pulse-rate at rest, and markedly increases the pulse-rate whilst at muscular work. Here again pulse-rate is considered to be a good indicator of distress.

We consider that most likely the combined effects of overheating and altitude caused the prostration by fatigue of the heart, the heart having to pump blood to the skin for cooling as well as to the muscles for work. Since we do not know of any previous experiments dealing with such a combination we record below some experiments which demonstrate that the combined effects of these two conditions markedly increase the heart beat. Previous observers have obtained some evidence that heart output is increased by overheating and by anoxæmia. Uyeno[2] has shown that the pulse-rate and output from the heart are increased by overheating. Haldane,[3] in reviewing the effects of anoxæmia upon the circulation, states that there is an increase of pulse-rate and of heart output. There is, however, some evidence[4] that heart output is not increased at rest by anoxæmia, although the pulse-rate is definitely increased.

TABLE I.—*Subject C. P. (Age 30 Years; W. = 58 kg.; H. = 161 cm.) Working on Ergometer, 300 kg. per min.*

No. of expt. and date in 1924 ..	I. 19/11.	II. 2/12.	III. 3/12.	IV. 4/12.	V. 5/12.	VI. 9/12.	VII. 10/12.	VIII. 11/12.
O₂ per cent. breathed	12·4	13·0	10·9	13·6	10·3	20·9	20·9	12·7
Temp. of room ° C.—								
Dry bulb	20·0	9·0	20·0	20·0	10·0	8·0	20·0	20·0
Wet bulb	15·0	9·0	15·5	14·5	8·0	7·0	14·5	14·5
Dry kata. of room	5·0	31·0	5·0	5·0	32·0	32·0	5·0	5·0
Temp. of air in balloon ° C.—								
Dry bulb	20·0	12·0	20·0	21·0	10·0	—	—	20·0
Wet bulb	12·0	10·0	16·0	12·0	8·0	—	—	20·0
Pulse-rate—								
Before 1st period of work ..	80	72	78	78	78	78	78	78
After 3 mins. work	132	120	132	122	128	100	108	129
" 5 " "	135	120	139	120	134	104	115	140
" 7 " "	140	132	142	129	148	105	115	140
" 10 " "	144	132	—	130	—	107	120	—
Before 2nd period of work ..	—	84	—	83	—	82	82	—
After 3 mins. work	—	108	—	122	—	95	114	—
" 6 " "	—	108	—	130	—	98	119	—
" 8 " "	—	110	—	134	—	98	122	—
" 10 " "	—	114	—	134	—	98†	127	—
Blood pressure—								
Before work 1st period ..	—	—	—	S120 D80(40)*	S95 D60(35)	S120 D75(45)	S95 D70(25)	S105 D70(35)
After " " " ..	—	—	—	S120 D50(70)	S110 D55(55)	S110 D60(50)	S105 D55(50)	S110 D60(50)
Before " 2nd " ..	—	—	—	—	—	S100 D75(25)	S95 D60(35)	—
After " " " ..	—	—	—	S90 D30(60)	—	S110 D60(50)	S95 D50(45)	—

Symptoms.—19/11: Weak; giddy; lips dark blue. 2/12: Headache. 3/12: Weak; giddy; lips dark blue. 4/12: Weak; giddy. 5/12: Weak; giddy; shivering. 9/12 and 10/12: Nil. 11/12: Weak; giddy; lips dark blue.

* Figures in parentheses give the pulse pressure. S, systolic; D, diastolic.

† The pulse-rates were lower in the second period of work (98) than in the first period (107) because the subject was cooler during the second period, having been exposed longer to the cold wind. The same effect is shown in Exp. II.

Plan of Experiment.

We employed two subjects, C. P. and D. S., who had acted as subjects in similar experiments on several previous occasions. They were not acclimatised to breathing oxygen at low tensions. C. P. was a healthy active individual but not of athletic habit. D. S. was of athletic habit and kept himself in training for football. D. S. wore ordinary winter clothing—that is, he was warmly clad—whilst C. P. wore light summer garments and worked in his shirt-sleeves and collarless. They worked on Schuster's[5] modification of the bicycle ergometer, doing only light work—namely, 300 kilogrammetres per minute at about 70 revolutions per minute, the pace being controlled by metronome. D. S. worked only for ten minutes, whilst C. P. worked for two periods of ten minutes separated by an interval of rest of about 12 minutes' duration; this was sufficient to give evidence—e.g., weakness (faintness), giddiness, headache—of oxygen deficiency under our conditions. All the experiments were carried out about three hours after breakfast.

To imitate the atmosphere at an altitude of 20,000 feet we used mixtures of gas containing about 10-13 per cent. of oxygen—that is, about half the oxygen content of the normal atmosphere at sea level, namely, 20·9 per cent. The gas was placed in a large balloon capable of holding 3000 litres, and the subject breathed the gas through an ordinary mouthpiece fitted with Rosling valves. The mouthpiece was used also when breathing normal air, to keep the experimental conditions constant. Some experiments were carried out in a laboratory room which was heated up to about 20° C.—that is, not very warm. Others were carried out in a tunnel at about 8-10° C., but as the tunnel was fitted with a large fan fairly cold conditions were obtained, giving high cooling powers as measured by the kata-thermometer.

Systolic and diastolic blood pressures were estimated by the auscultation method (brachial artery) just before commencing work and immediately after cessation of work. At intervals during work the pulse-rate was counted in the radial artery at the wrist, counts by two different observers agreeing closely; none of the figures exceeded 150 per minute.

The main results of the experiments are given in tables; full details for subject C. P. will be found in Table I. As the details for D. S. were similar they are omitted. Some experiments were carried out in which the subjects walked for ten minutes on a revolving platform at the rate of four to five miles an hour. The results obtained were similar to those given for the ergometer and are therefore omitted.

Increase of Pulse-Rate under Warm Conditions.

The main results of these experiments are given in Table II. We compared two sets of atmospheric conditions keeping other experimental conditions similar; one set of experiments was carried out in a moderately warm room about 20° C. dry bulb, and with a dry kata-thermometer cooling power of about 5 millicalories per sq. cm. per sec.; the other set of experiments was carried out in a tunnel with a strong wind blowing, the dry-bulb temperature being about 8-10° C., whilst the dry kata-thermometer cooling power was about 32.

In Table II. the experiments are numbered mainly for reference to the detailed accounts in Table I. In Tables II., III., and IV. the experiments which are compared with one another are bracketed together. It will be observed that with subject D. S. (Table II.) the pulse-rate was on an average 12 beats per minute faster under the warmer conditions (dry kata cooling power 5·0) than under the cool conditions (cooling power 32·0). C. P.'s pulse-rate was very much faster under the warmer conditions (cooling power 5·0), being on an average 24 beats per minute faster than under the cooler conditions (cooling power 32·0). C. P., as already stated, was only lightly clothed and remained longer in the cold wind than D. S., and was therefore much more cooled down by the wind than D. S. It will be observed that these differences were similar, whether the subject was breathing oxygen at a high percentage, i.e., 20·0, or at low percentage, i.e., 10-13. Under the low oxygen tensions due allowance was made for the effect of temperature upon the oxygen content of a given volume of gas; of course, the quantity of oxygen present in a given volume of gas at 0° C. is nearly 0·8 per cent. higher than in the same volume of gas at 20° C., owing to expansion under increase of temperature.

TABLE II.

Subject.	Expt. No.	Dry kata-thermometer cooling power.	O_2 p.c.	Pulse-rate during last minute of work.	*Increase in pulse-rate due to— *A.*
D. S.	IV.	5·0	20·9	125	11
	III.	32·0	20·9	114	
	I.	5·0	10·9	140	10
	II.	32·0	10·3	130	
	V.	5·0	11·3	135	15
	VI.	32·0	10·7	120	(Av. = 12)
C. P.	VII.	5·0	20·9	127	29
	VI.	32·0	20·9	98	
	IV.	5·0	13·6	134	20
	II.	31·0	13·0	114	(Av. = 24)

TABLE III.

					B.
D. S.	I.	5·0	10·9	140	15
	IV.	5·0	20·9	125	
	II.	32·0	10·3	130	16
	III.	32·0	20·9	114	
	V.	5·0	11·3	135	10
	IV.	5·0	20·9	125	(Av. = 14)
C. P.	IV.	5·0	13·6	134	7
	VII.	5·0	20·9	127	
	II.	31·0	13·0	114	16
	VI.	32·0	20·9	98	(Av. = 11)

TABLE IV.

					C.
D. S.	I.	5·0	10·9	140	26
	III.	32·0	20·9	114	
	V.	5·0	11·3	135	21
	III.	32·0	20·9	114	(Av. = 23)
C. P.	IV.	5·0	13·6	134	36
	VI.	32·0	20·9	98	

* Increase in pulse-rate due to *A*, warmer conditions; *B*, low oxygen; and *C*, low oxygen plus warmer conditions.

Increase of Pulse-Rate due to Breathing Air with Low Oxygen Tension.

These experiments are given in Table III. Here the atmospheric conditions were kept constant whilst the oxygen percentage was varied from about 10 to 21. It will be observed that with subject D. S. the pulse-rate was on an average 14 beats faster whilst at work and breathing oxygen at low tension. Some experiments were done under warm conditions, i.e., cooling power 5·0, and some under cool conditions, i.e., cooling power 32·0, the effect of the low oxygen tension being much the same in both cases. C. P. gave similar results, his pulse-rate on an average being 11 beats faster per minute whilst breathing oxygen at low tension; his experiment under the warmer conditions, i.e., cooling power 5·0, did not show so great a difference in pulse-rate as those of D. S. under similar conditions because C. P. was more lightly clothed and therefore less heated.

Increase in Pulse-Rate due to the Combined Effects of Warm Conditions and Low Oxygen Tension.

We have shown that in D. S. the pulse-rate was about 12 beats faster under warm conditions, and about 14 beats faster under low oxygen tension, so that, as might be expected, the effect of combining these conditions was that the pulse-rate was about 26 beats faster than whilst breathing normal air under cool conditions. Similarly, for subject C. P. the combined effects of heat and low oxygen tension produced a pulse-rate about 35 (24 + 11) beats faster than the rate under cool conditions with normal oxygen tension. This comparison is made clearer in Table IV. The details of the experiment under the warmer conditions (cooling power 5·0) and with low oxygen tension (10·0-13·6) are in each case given above those for the cooler conditions (cooling power 32·0) and with normal oxygen tension (20·9). C. P. was more affected by breathing air with low oxygen tension than D. S. C. P. was not able to work for any length of time with a lower oxygen tension than 13 per cent. without becoming weak and giddy. C. P. was less in training than D. S. Athletes in training are less affected by altitude than more sedentary individuals.

In both subjects symptoms of anoxæmia and discomfort were more marked under warm conditions with low oxygen tension than under other conditions studied.

Effect of Breathing Air Saturated with Moisture and at Low Oxygen Tension.

Major Hingston refers to the air being saturated with moisture in the case of glacier lassitude. It was considered that breathing air saturated with moisture might, at low oxygen tension, interfere with the passage of oxygen through the lung epithelium into the blood, owing to (*a*) the lowering of oxygen partial pressure by increase of vapour pressure—this factor is almost negligible in itself under the conditions concerned; (*b*) increased wetness of the pulmonary epithelium—e.g., as in œdema. Using the pulse-rate as an indicator, experiments were carried out breathing fairly dry air (relative humidity 50-60 per cent.) and breathing air saturated with moisture (relative humidity 100 per cent.), the oxygen tension being low in both cases. The pulse-rates were much the same, so we concluded that the moisture did not interfere with the absorption of oxygen under our experimental conditions.

The experiments concerned are for D. S., Nos. V. and I., and for C. P., Nos. VIII. and I. In the first-mentioned experiment for each subject the air in the balloon was saturated with moisture (T. = 20° C.). In the second experiment the air was much dryer (dry bulb = 20° C.; wet bulb = 12° C.).

Blood Pressure.

Schneider and his colleagues[6] have studied the problem in detail and have shown that light muscular work at high altitude causes but a slight increase in systolic blood pressure, but more severe work markedly raises the blood pressure. An examination of our figures for blood pressure given in Table I. will show that breathing air with low oxygen tension during light work did not produce any immediate after-effects on blood pressure which differed materially from those obtained when air with normal oxygen tension was breathed, although the former conditions produced cyanosis and giddiness. It was observed that the pulse pressure—i.e., the difference between systolic and diastolic pressures—was greater after work than before; this was not dependent upon the oxygen tension in the air breathed and was previously observed under normal conditions by Dawson.[7]

Conclusion.

From the above results it may be concluded that "glacier lassitude" was due to the combined effects —of over-heating of the body and of breathing oxygen at low tension—upon the heart; and also that under such conditions the pulse-rate is a good indicator of distress of the heart and of body discomfort, a pulse-rate of 140 per minute being observed in our subjects just before failure to complete the task imposed upon them.

by fatigue of the heart, the heart having to pump blood to the skin for cooling as well as to the muscles for work. Since we do not know of any previous experiments dealing with such a combination we record below some experiments which demonstrate that the combined effects of these two conditions markedly increase the heart beat. Previous observers have obtained some evidence that heart output is increased by overheating and by anoxæmia. Uyeno [2] has shown that the pulse-rate and output from the heart are increased by overheating. Haldane,[3] in reviewing the effects of anoxæmia upon the circulation, states that there is an increase of pulse-rate and of heart output. There is, however, some evidence[4] that heart output is not increased at rest by anoxæmia, although the pulse-rate is definitely increased.

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Temp. of room ° C.—								
Dry bulb	20·0	9·0	20·0	20·0	10·0	8·0	20·0	20·0
Wet bulb	15·0	9·0	15·5	14·5	8·0	7·0	14·5	14·5
Dry kata. of room	5·0	31·0	5·0	5·0	32·0	32·0	5·0	5·0
Temp. of air in balloon ° C.—								
Dry bulb	20·0	12·0	20·0	21·0	10·0	—	—	20·0
Wet bulb	12·0	10·0	16·0	12·0	8·0	—	—	20·0
Pulse-rate—								
Before 1st period of work ..	80	72	78	78	78	78	78	78
After 3 mins. work	132	120	132	122	128	100	108	129
„ 5 „ „	135	120	139	120	134	104	115	110
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„ 10 „ „	144	132	—	130	—	107	120	—
Before 2nd period of work ..	—	84	—	83	—	82	82	—
After 3 mins. work	—	108	—	122	—	95	114	—
„ 6 „ „	—	108	—	130	—	98	119	—
„ 8 „ „	—	110	—	134	—	98	122	—
„ 10 „ „	—	114	—	131	—	98†	127	—
Blood pressure—								
Before work 1st period ..	—	—	—	S120 D80(40)*	S95 D60(35)	S120 D75(15)	S95 D70(25)	S105 D70(35)
After „ „ „ ..	—	—	—	S120 D50(70)	S110 D55(55)	S110 D60(50)	S105 D55(50)	S110 D60(50)
Before „ 2nd „ ..	—	—	—	—	—	S100 D75(25)	S95 D60(35)	—
After „ „ „ ..	—	—	—	S90 D30(60)	—	S110 D60(50)	S95 D50(45)	—

Symptoms.—19/11: Weak; giddy; lips dark blue. 2/12: Headache. 3/12: Weak; giddy; lips dark blue. 4/12: Weak; giddy. 5/12: Weak; giddy; shivering. 9/12 and 10/12: Nil. 11/12: Weak; giddy; lips dark blue.

* Figures in parentheses give the pulse pressure. S, systolic; D, diastolic.

† The pulse-rates were lower in the second period of work (98) than in the first period (107) because the subject was cooler during the second period, having been exposed longer to the cold wind. The same effect is shown in Exp. II.

Plan of Experiment.

We employed two subjects, C. P. and D. S., who had acted as subjects in similar experiments on several previous occasions. They were not acclimatised to breathing oxygen at low tensions. C. P. was a healthy active individual but not of athletic habit. D. S. was of athletic habit and kept himself in training for football. D. S. wore ordinary winter clothing—that is, he was warmly clad—whilst C. P. wore light summer garments and worked in his shirt-sleeves and collarless. They worked on Schuster's[5] modification of the bicycle ergometer, doing only light work—namely, 300 kilogrammetres per minute at about 70 revolutions per minute, the pace being controlled by metronome. D. S. worked only for ten minutes, whilst C. P. worked for two periods of ten minutes separated by an interval of rest of about 12 minutes' duration; this was sufficient to give evidence—e.g., weakness (faintness), giddiness, headache—of oxygen deficiency under our conditions. All the experiments were carried out about three hours after breakfast.

To imitate the atmosphere at an altitude of 20,000 feet we used mixtures of gas containing about 10–13 per cent. of oxygen—that is, about half the oxygen content of the normal atmosphere at sea level, namely, 20·9 per cent. The gas was placed in a large balloon capable of holding 3000 litres, and the subject breathed the gas through an ordinary mouthpiece fitted with Rosling valves. The mouthpiece was used also when breathing normal air, to keep the experimental conditions constant. Some experiments were carried out in a laboratory room which was heated up to about 20° C.—that is, not very warm. Others were carried out in a tunnel at about 8–10° C., but as the tunnel was fitted with a large fan fairly cold conditions were obtained, giving high cooling powers as measured by the kata-thermometer.

Systolic and diastolic blood pressures were estimated by the auscultation method (brachial artery) just before commencing work and immediately after cessation of work. At intervals during work the pulse-rate was counted in the radial artery at the wrist, counts by two different observers agreeing closely; none of the figures exceeded 150 per minute.

The main results of the experiments are given in tables; full details for subject C. P. will be found in Table I. As the details for D. S. were similar they are omitted. Some experiments were carried out in which the subjects walked for ten minutes on a revolving platform at the rate of four to five miles an hour. The results obtained were similar to those given for the ergometer and are therefore omitted.

Increase of Pulse-Rate under Warm Conditions.

The main results of these experiments are given in Table II. We compared two sets of atmospheric conditions keeping other experimental conditions similar; one set of experiments was carried out in a moderately warm room about 20° C. dry bulb, and with a dry kata-thermometer cooling power of about 5 millicalories per sq. cm. per sec.; the other set of experiments was carried out in a tunnel with a strong wind blowing, the dry-bulb temperature being about 8–10° C., whilst the dry kata-thermometer cooling power was about 32.

In Table II. the experiments are numbered mainly for reference to the detailed accounts in Table I. In Tables II., III., and IV. the experiments which are compared with one another are bracketed together. It will be observed that with subject D. S. (Table II.) the pulse-rate was on an average 12 beats per minute faster under the warmer conditions (dry kata cooling power 5·0) than under the cool conditions (cooling power 32·0). C. P.'s pulse-rate was very much faster under the warmer conditions (cooling power 5·0), being on an average 24 beats per minute faster than under the cooler conditions (cooling power 32·0). C. P., as already stated, was only lightly clothed and remained longer in the cold wind than D. S., and was therefore much more cooled down by the wind than D. S. It will be observed that these differences were similar, whether the subject was breathing oxygen at a high percentage, i.e., 20·9, or at low percentage, i.e., 10-13. Under the low oxygen tensions due allowance was made for the effect of temperature upon the oxygen content of a given volume of gas; of course, the quantity of oxygen present in a given volume of gas at 0° C. is nearly 0·8 per cent. higher than in the same volume of gas at 20° C., owing to expansion under increase of temperature.

TABLE II.

Subject.	Expt. No.	Dry kata-thermometer cooling power.	O_2 p.c.	Pulse-rate during last minute of work.	*Increase in pulse-rate due to— *A.*
D. S.	IV.	5·0	20·9	125	11
	III.	32·0	20·9	114	
	I.	5·0	10·9	140	10
	II.	32·0	10·3	130	
	V.	5·0	11·3	135	15
	VI.	32·0	10·7	120	(Av. = 12)
C. P.	VII.	5·0	20·9	127	29
	VI.	32·0	20·9	98	
	IV.	5·0	13·6	134	20
	II.	31·0	13·0	114	(Av. = 24)

TABLE III.

					B.
D. S.	I.	5·0	10·9	140	15
	IV.	5·0	20·9	125	
	II.	32·0	10·3	130	16
	III.	32·0	20·9	114	
	V.	5·0	11·3	135	10
	IV.	5·0	20·9	125	(Av. = 14)
C. P.	IV.	5·0	13·6	134	7
	VII.	5·0	20·9	127	
	II.	31·0	13·0	114	16
	VI.	32·0	20·9	98	(Av. = 11)

TABLE IV.

					C.
D. S.	I.	5·0	10·9	140	26
	III.	32·0	20·9	114	
	V.	5·0	11·3	135	21
	III.	32·0	20·9	114	(Av. = 23)
C. P.	IV.	5·0	13·6	134	36
	VI.	32·0	20·9	98	

* Increase in pulse-rate due to *A*, warmer conditions; *B*, low oxygen; and *C*, low oxygen plus warmer conditions.

Increase of Pulse-Rate due to Breathing Air with Low Oxygen Tension.

These experiments are given in Table III. Here the atmospheric conditions were kept constant whilst the oxygen percentage was varied from about 10 to 21. It will be observed that with subject D. S. the pulse-rate was on an average 14 beats faster whilst at work and breathing oxygen at low tension. Some experiments were done under warm conditions, i.e., cooling power 5·0, and some under cool conditions, i.e., cooling power 32·0, the effect of the low oxygen tension being much the same in both cases. C. P. gave similar results, his pulse-rate on an average being 11 beats faster per minute whilst breathing oxygen at low tension; his experiment under the warmer conditions, i.e., cooling power 5·0, did not show so great a difference in pulse-rate as those of D. S. under similar conditions because C. P. was more lightly clothed and therefore less heated.

Increase in Pulse-Rate due to the Combined Effects of Warm Conditions and Low Oxygen Tension.

We have shown that in D. S. the pulse-rate was about 12 beats faster under warm conditions, and about 14 beats faster under low oxygen tension, so that, as might be expected, the effect of combining these conditions was that the pulse-rate was about 26 beats faster than whilst breathing normal air under cool conditions. Similarly, for subject C. P. the combined effects of heat and low oxygen tension produced a pulse-rate about 35 (24 + 11) beats faster than the rate under cool conditions with normal oxygen tension. This comparison is made clearer in Table IV. The details of the experiment under the warmer conditions (cooling power 5·0) and with low oxygen tension (10·9-13·6) are in each case given above those for the cooler conditions (cooling power 32·0) and with normal oxygen tension (20·9). C. P. was more affected by breathing air with low oxygen tension than D. S. C. P. was not able to work for any length of time with a lower oxygen tension than 13 per cent. without becoming weak and giddy. C. P. was less in training than D. S. Athletes in training are less affected by altitude than more sedentary individuals.

In both subjects symptoms of anoxæmia and discomfort were more marked under warm conditions with low oxygen tension than under other conditions studied.

Effect of Breathing Air Saturated with Moisture and at Low Oxygen Tension.

Major Hingston refers to the air being saturated with moisture in the case of glacier lassitude. It was considered that breathing air saturated with moisture might, at low oxygen tension, interfere with the passage of oxygen through the lung epithelium into the blood, owing to (*a*) the lowering of oxygen partial pressure by increase of vapour pressure—this factor is almost negligible in itself under the conditions concerned; (*b*) increased wetness of the pulmonary epithelium—e.g., as in œdema. Using the pulse-rate as an indicator, experiments were carried out breathing fairly dry air (relative humidity 50-60 per cent.) and breathing air saturated with moisture (relative humidity 100 per cent.), the oxygen tension being low in both cases. The pulse-rates were much the same, so we concluded that the moisture did not interfere with the absorption of oxygen under our experimental conditions.

The experiments concerned are for D. S., Nos. V. and I., and for C. P., Nos. VIII. and I. In the first-mentioned experiment for each subject the air in the balloon was saturated with moisture (T. = 20° C.). In the second experiment the air was much dryer (dry bulb = 20° C.; wet bulb = 12° C.).

Blood Pressure.

Schneider and his colleagues[6] have studied the problem in detail and have shown that light muscular work at high altitude causes but a slight increase in systolic blood pressure, but more severe work markedly raises the blood pressure. An examination of our figures for blood pressure given in Table I. will show that breathing air with low oxygen tension during light work did not produce any immediate after-effects on blood pressure which differed materially from those obtained when air with normal oxygen tension was breathed, although the former conditions produced cyanosis and giddiness. It was observed that the pulse pressure—i.e., the difference between systolic and diastolic pressures—was greater after work than before; this was not dependent upon the oxygen tension in the air breathed and was previously observed under normal conditions by Dawson.[7]

Conclusion.

From the above results it may be concluded that "glacier lassitude" was due to the combined effects—of over-heating of the body and of breathing oxygen at low tension—upon the heart; and also that under such conditions the pulse-rate is a good indicator of distress of the heart and of body discomfort, a pulse-rate of 140 per minute being observed in our subjects just before failure to complete the task imposed upon them.

II. THE VALUE OF OXYGEN.

Major Hingston[1] points out that theoretically the breathing of oxygen should have proved of enormous benefit in alleviating the symptoms produced by the high altitude. He states that it is remarkable how little benefit was obtained from the oxygen compared with the experiences of the previous expedition. In the discussion which followed Major Hingston's paper Prof. Haldane stated that in acclimatised individuals it is not mainly want of oxygen which is worrying immediately at onset of muscular work at high altitude, but excess of carbon dioxide which must be kept much lower in order to preserve normal alkalinity, the blood losing alkali at high altitude. Mr. Barcroft pointed out that the climbers may not have been getting the adequate or calculated amount of oxygen, and questioned whether the cumulative effects of want of oxygen over days and weeks can be abolished by the immediate breathing of oxygen. This appears to be of great importance; it is not likely that results obtained by breathing oxygen during anoxæmia at sea-level may be applied to an individual who has become acclimatised to such high altitudes.

Some results indicating the beneficial effects of breathing oxygen at high tension during exercise at sea-level are of interest in the present discussion. L. Hill and Flack[8] showed that an athlete can perform vigorous exercise for a longer period when breathing oxygen at a high tension; they showed that the high oxygen content in the lung enabled an athlete to tolerate a higher CO_2 tension—even up to 11 per cent.—in the alveolar air. They[9] also found that the time taken to run a given distance is lowered, the pulse frequency lowered, and blood pressure kept up by breathing oxygen and a feeling of relief to the dyspnœa is given by the oxygen; they thought that oxygen inhalation increased the lasting power and lessened the fatigue of athletes by maintaining or restoring the vigour of the heart. More recently A. V. Hill and his colleagues[10] have suggested that the heart output during work varies directly as the oxygen saturation of the arterial blood, because they found an increase of oxygen-intake whilst breathing oxygen at 50 per cent., instead of the normal 21 per cent. oxygen, and a decrease of oxygen-intake whilst breathing oxygen at 11·3 per cent. In other words, anoxæmia decreased the output of the heart during work, and increased oxygen saturation of the blood increased the output of the heart. It is difficult to understand how there can be any "unsaturation" of the arterial blood whilst breathing oxygen at 21 per cent. unless the subject is unfit to do the task or the breath is held during it. We know that many believe there is during exercise in untrained individuals some anoxæmia but we doubt if any observer has proved by direct observation that the arterial blood is at all unsaturated by muscular exercise in fit individuals breathing freely. One of us (J. A. C.) has carried out observations on rabbits which in order to escape being held struggled vigorously for a few minutes until tired. Exercise produced a slight increase in the saturation of the arterial blood whilst the animal was breathing ordinary air with 21 per cent. oxygen. Samples were taken immediately before and immediately after exercise from a large artery of an ear of a suitable rabbit and the oxygen content in 2 c.cm. of blood estimated by Van Slyke's method. The five experiments completed indicated about 15 volumes per cent. in the arterial blood, a normal figure for the rabbit. If, then, exercise does not produce any unsaturation of the blood whilst breathing 21 per cent. oxygen, it is difficult to see how breathing 50 per cent. can make any difference beyond the increase in the quantity of oxygen in solution; this, although small, may quite easily be doubled in amount. Thus, if the alveolar oxygen is at a tension of 90–100 mm. Hg there would be about 0·25 volume per cent. oxygen in solution and the hæmoglobin fully saturated, whereas if the alveolar oxygen tension were increased to 150 mm. Hg the hæmoglobin is, of course, fully saturated, but the dissolved oxygen is now 0·40 volume per cent.—a big increase on 0·25. It is quite possible, then, that it is the oxygen in solution in the blood which is the deciding factor. It is obvious that as far as the cells of the respiratory and other centres, and of the heart and other organs, are concerned, it is the oxygen in solution that first alters their surrounding conditions. We know that the excised heart can be kept beating if the coronary arteries are perfused with oxygenated Ringer's solution, and that a mouse poisoned with carbon monoxide can live in two atmospheres of oxygen, there then being enough in solution to keep it going (Haldane).

Therefore the amount of oxygen in solution in the blood and tissue fluids is probably of more importance at a high altitude than the degree of saturation of the hæmoglobin with oxygen; of course, one depends to a great extent upon the other; but the limiting factor to endurance may be the removal of O_2 from the fluids bothering the tissue cells at a rate more rapid than the passage of O_2 from the blood to these tissue fluids; the latter, of course, depends upon the O_2-tension in the plasma—i.e., the oxygen in solution. It may be that in the Everest climbers the oxygen in solution is below the limit required by the nervous system and heart. Thus if, say, at 29,000 feet, where the pressure is about one-third atmosphere or 250 mm., to gain any advantage at all from oxygen nearly pure oxygen would have to be used. The Everest oxygen apparatus was arranged to deliver up to 5 litres per min., the oxygen flowing through a tube held in the mouth. Supposing the tap was turned so as to give 3 litres, these at one-third atmosphere pressure would expand to 9 litres, and much would be lost to the air. The mouth would be open owing to the deep respirations taken, and the dilution of oxygen with air was then probably great. Breathing air containing, say, 30 per cent. of oxygen at this height would only give about 84 mm. pressure in the air breathed and perhaps only about 60 mm. pressure of oxygen in the alveolar air, which would mean less than 90 per cent. saturation and only 0·18 volume per cent. oxygen in solution. This is shown in Table V., slightly modified—after Van Slyke and Stadie.[11]

TABLE V.—*Oxygen Estimated Held in Physical Solution by Blood at 38° C. at Different Oxygen Tensions and Saturations.*

A. = Saturation of hæmoglobin in blood with O_2 (per cent.).
B. = O_2 tension (alveolar air) corresponding to saturation in column A. (mm. Hg).
C. = Oxygen physically dissolved at 38° C. (vol. per cent.).

A.	B.	C.	A.	B.	C.	A.	B.	C.
0	0	0·00	50	27	0·08	95	90	0·24
10	11	0·03	60	31	0·09	100	120	0·32
20	16	0·04	70	37	0·11	100	140	0·37
30	19	0·05	80	46	0·13	100	150	0·40
40	22	0·07	*90*	*65*	*0·18*			

Since the alveolar oxygen tension is normally about 90 to 100 mm. Hg there is normally in solution in the blood 0·3 volume per cent. oxygen, and this is the amount immediately available for the tissues, e.g., nervous centres and heart muscle, as the blood flows through them. Perhaps too little attention has been directed formerly to the oxygen in solution in the blood, and it may be the increase in the amount of this whilst breathing oxygen at high tension which is responsible for the increased output of heart, increased intake of oxygen, and general relief to subjects performing excessive muscular work. Also at high altitudes it may be the decrease of the oxygen in solution which is the important factor.

Summary.

(1) In such conditions as "glacier lassitude" as experienced on Mount Everest, produced by the combined effects of overheating the body and of breathing oxygen at low tension during light muscular

work, the heart beat is markedly increased in rate owing merely to summation of the effects of each *factor upon the heart. The pulse-rate is an excellent* guide to discomfort and distress of the heart during such conditions, a rate of 140 per minute being considered the limit of safety in the subjects under the conditions specified.

(2) The presence of moisture in the air does not interfere with the passage of oxygen through the lung epithelium, although it greatly influences the heart through the overheating of the body owing to reduced evaporation of fluid from the body.

(3) The beneficial effects of breathing oxygen at high tension during exercise are considered to be due to the increased amount of oxygen in physical solution in the blood.

(4) Vigorous exercise in rabbits breathing air at *sea-level approximately, slightly increased the saturation* of the arterial blood with oxygen.

(5) The amount of oxygen in solution in the blood is probably *of more importance than the degree of* saturation of the hæmoglobin with oxygen, under conditions of bodily stress.

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PROCEEDINGS OF THE ROYAL COMMISSION ON NATIONAL HEALTH INSURANCE.[*]

(Continued from p. 891.)

EVIDENCE OF THE NATIONAL INSURANCE BENEFICENT SOCIETY.

(Q. 8814–8822.) Evidence was given by the joint secretaries, Mr. Canter and Mr. Rockliff, on behalf of this society, which is neither an Approved Society nor a statutory body, but a corporate body *acting* under licence from the Board of Trade. It has a dual capacity, acting partly as a medium through which various Approved Societies arrange for "additional (treatment) benefits"—mainly dental and optical treatment—and partly as a charity receiving contributions from various institutes and from individual members of trade unions and other bodies by means of collecting boxes.

(Q. 8907–8.) In respect of its unincorporate side, *a full account is rendered to each contracting society*, but on the incorporate side no such account is rendered,

> because we were *legally advised* we were *not authorised* to deal with moneys contributed to a charitable fund in that way. But it is open to [an officer of] any society which is a contributor to our funds to come and ascertain for himself exactly how far its subscriptions to the incorporate body have been spent for the advantage of the persons recommended by the society.

Extent of the Operations of the N.I.B.S.

(Q. 8891–2, 8921–3, 8978.) The *total income* of the N.I.B.S. for 1923 was about £60,000, equally divided between the two sections of its operations. The society *does not act for the large industrial societies*, and the total membership of the various societies who make use of its machinery is upwards of 1,000,000.

Arrangements with Dentists.

(App. XVIII., 10–31; Q. 8837.) The number of dentists with whom arrangements have been made by this society were summarised in answer to a question, as follows:—

> Originally in 1921 we entered into contracts with 1500 surgeon dentists. Then we entered into an arrangement with the Incorporated Dental Society, which society included the best of the non-qualified men. Then later on, after the 1921 Act, we entered into arrangements with members of the Public Dental Service Association, which consists very largely of 1921 men. The total number would be 1500 originally qualified men, 1200 Incorporated Dental Society *men, and probably 3000 or 4000* Public Dental Service Association men.

The scale of fees first proposed was lower than that arrived at later as a compromise following a dispute with the British Dental Association.

(Q. 8985–8.) Whether because the dentists under the original contract have not appreciated the fact of the later scale, or for some other reason, the fact appears to be that they have not, to a very large extent, gone up to the agreed maximum scale, with the result that the better qualified men are getting the lower fee. This was described by a member of the Commission as a sort of Alice-in-Wonderland scheme. Actual particulars of the scale were not given.

Cost of a National Scheme.

The witnesses were of opinion that a 100 per cent. service would cost approximately 6s. 0*d*. per head per annum, but they considered it questionable whether a capitation system of payment could be arranged.

> (Q. 8828.) The capitation fee for medical service is based solely on the service of the medical man himself; but, as regards dental benefit, you have got the mechanic who is involved, you have got the provision of materials for the making-up of goods, quite apart from the services of the dentist himself, and those various factors, in our judgment, would make it difficult to arrange a capitation service with the *profession*.

The N.I.B.S. has issued approximately 35,000 dental letters. Many thousands of these have not progressed beyond the estimate stage. The experience of one society showed that where a grant of 50 per cent. was reduced to one of 25 per cent., the percentage of uncompleted cases rose from 24 per cent. to 57 per cent.

> (App. XVIII., 16.) It is fair to assume therefore that in *any national (or other) scheme of dental* benefit not based on a full grant, the number of applicants who would be deprived *of* the benefit for financial reasons would be somewhere about 50 per cent.

Advocacy of Dental Clinics.

(App. XVIII., 22–24.) This society recommends the setting up of clinics in industrial areas, manned by whole-time dentists, both in the interests of efficiency *and cost*, but—

> unless clinics were of an attractive character and care were taken as regards the staffing and the manner in which treatment was given, clinics would soon come to be regarded as Poor-law Institutions and fail of their purpose.

The N.I.B.S. has *provided a dental clinic* (Q. 9006) Attached to it are two dental surgeons, an anæsthetist, and a nurse. One of the advantages claimed is that no unnecessary work or needless extraction is performed.

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[*] In previous articles the proceedings of the Commission were reported under the following headings: Introductory Note; The Scope of the *Insurance* Scheme (see THE LANCET, Jan. 31st, pp. 247–8); The Provision of Medical Benefit (Feb. 7th, pp. 301–3; *Feb. 14th, pp. 355–6; Feb. 21st*, pp. 403–5); Financial Provisions of the Act (Feb. 28th, pp. 454–7); Medical Certification and the Regional Medical Staff (March 7th, pp. 508–9); The Approved Societies and the Money Benefits (March 14th, pp. 564–5; March 21st, pp. 623–4); *Evidence* of the Hearts of Oak Society (March 28th, pp. 677–9); Evidence of the National Conference of Industrial Assurance *Approved* Societies and of the Manchester Unity Approved Society (April 4th, pp. 731–3); Evidence of Independent Order of Rechabites, of Rational Association Friendly Society, and of Miners' Societies (April 11th, pp. 784–6; April 18th, p. 839); *Evidence of Mr. Alban Gordon* (April 18th, pp. 839–40); Evidence of Joint Committee of Approved Societies, of Stock Exchange and Lloyds' Health Insurance Societies, and of Group of Catholic Approved Societies (April 25th, pp. 889–91).

References to the paragraphs in the *printed* statements issued as appendices to the reports of the oral evidence are given thus: "App. X. 69," and references to the *oral evidence* thus—Q. 1369.

A Proposed Machiavellian Scheme.

(App. XVIII., 25. Q. 9041.) The witnesses suggested what was described by a member of the Commission as a rather Machiavellian scheme as likely to be advocated by the dental profession—namely, the exclusion from any national scheme at the present time of the provision of dentures.

> Approved societies would then be faced with a toothless membership, liable to all sorts of further ill-health through want of the means of masticating food. The profession believe that this state of things would then almost immediately result in an agitation for a complete service, and that the end they have in view would thus be speedily obtained by taking two steps instead of one. There is ground for believing that neither the insured nor their societies would be content to accept this truncated form of a National Dental Service.

Medical Certificates for Dental Treatment Useless.

(App. XVIII., 29, 30.) Medical certificates for dental work appear to these witnesses to serve no other purpose than to transfer any fee up to 5*s.* from the pocket of the needy recipient of the benefit to the pocket of the doctor giving the certificate. In the thousands of cases where this formality has been required at the request of societies, the N.I.B.S. is unaware of any single case in which a certificate has not been forthcoming.

Optical Treatment.

(App. XVIII., 32–70.) The arrangements for this benefit made with the National Association of Opticians include the payment of a fee of 5*s.* for each person sent to an optician for examination and, where glasses are supplied, the price of the glasses. Spectacles in steel frames cost approximately 10*s.* 6*d.*, but usually something better is required.

The evidence suggests that a claim had been put forward by the medical profession that all insured persons receiving optical benefit should be first examined by an ophthalmic surgeon, or by some medical man, panel or other, who claims to possess knowledge and experience as regards diseases of the eye.

> It is said, in support of the medical contention, that 5 per cent. of all persons requiring glasses are suffering from a disease of the eye which would pass undetected by an optician, however qualified as an optician he might be. . . In reality, therefore, the claim of the medical profession is that the whole 100 per cent. of claimants for optical benefit should be compelled, in the first instance, to see a doctor, in order that the 5 per cent. amongst them who possess diseases of the eye, not ordinarily patent to an optician, might be ascertained and properly advised or treated.

For examining each person it was understood that the medical profession proposed that a fee of one guinea should be charged.

> (Q. 9120.) How is anybody to know whether it is one of the 5 per cent. or one of the 95 per cent. ?—I agree that is the difficulty, but we endeavour to get over that difficulty at a reasonable fee through the medium of our clinic.

An Optical Clinic.

(App. XVIII., 53–7.) The clinic to which reference is made is established in London with a West End ophthalmic surgeon in charge. He is remunerated on a basis which enables one guinea to be distributed over three patients. He is limited to 12 patients per session of two hours. If the surgeon feels that he would like to see patients more than once, no extra charge is made in respect of such additional attendance.

(Q. 9141.) A member of the Commission observed in the form of a question that he was associated with a clinic run under municipal auspices and conducted by one of the best-known ophthalmic surgeons in the West of Scotland at an average cost of 3*s.* 4*d.*

(Q. 9121–47.) With regard to the guinea fee contemplated by the medical profession, the witnesses said that although this might be worth while in the individual case in view of the 5 per cent. chance of serious disease, the proper course in a scheme of a national character would be to establish clinics of the kind which this society had already done. As regards examinations by opticians, they said:

> We have attempted outside of the clinic, as I pointed out, to see that it does not pay an optician to proceed with the case if he has the slightest doubt in connexion with it. He gets his money whether he supplies the glasses or not; he gets exactly the same fee; and therefore it does help to secure that the patient, if there is the slightest doubt of any disease of the eye, is referred to a competent ophthalmic surgeon.

Nursing.

(App. XVIII., 71–92.) Nursing as an additional benefit under the National Health Insurance Acts is described in this evidence as a comparative failure, mainly because contributions are already paid to nursing associations by the industrial section of the community, and they therefore see no reason for bringing their Approved Society into the matter, and also because of the fact that where continuous nursing is desirable it is provided in hospitals and other institutions to which the patient is removed, and the accommodation available to the industrial population in their homes practically prohibits resident nursing.

> From the experience of the past three years no society could justify the payment of a capitation fee for nursing in respect of the whole of its membership.

Hospital Treatment.

(App. XVIII., 93–8. Q. 9173–7.) The N.I.B.S. in 1921 took the initiative in getting into touch with the British Hospitals Association with a view to securing in-patient treatment for insured persons, and, in the result, a joint committee formed of representatives of Approved Societies and of members of the Executive of the British Hospitals Association was set up. The arrangements made by societies with the hospitals are of two kinds. Under one arrangement a definite sum is paid per week of in-patient treatment. In other cases the sum set aside by the society is divided amongst the hospitals each quarter in proportion to the number of members of the society treated in the institution during the quarter.

It was agreed that the payments made by the society should not prohibit the hospital from claiming a further payment from a patient in a position to afford it. The witnesses recommended that out-patient treatment for insured persons should be included as an additional benefit in view of the fact that many insured persons are sent to the hospital by the panel doctor. As regards finding the money, they suggested that—

> The relief which panel practitioners obtain by transferring insured persons to the out-patient wards of hospitals would seem to entitle the latter to some consideration in the distribution of the money provided for medical benefit under the Insurance Act.

Massage and Electrical Treatment.

(App. XVIII., 106. Q. 9193–5.) The witnesses thought that these should be added to the list of additional benefits, and said that there was a frequent and increasing number of recommendations by panel doctors for these forms of treatment.

> I have listened within the last two or three weeks to the figures given by one of the surgeons of St. Thomas's Hospital as to the extraordinary number of cases where massage treatment and radiant heat treatment have been provided by that institution not only to those who have been inmates of the institution, but also to out-patients. It really opened my eyes as to the extent to which these services are at present medically recommended and medically provided.

It was suggested that the provision of X ray photographs, blood tests, &c., should also be included in the additional benefits which might be given under the National Health Insurance Acts.

LONDON INTER-COLLEGIATE SCHOLARSHIPS BOARD. The Board announces that six medical entrance scholarships and exhibitions of an aggregate total value of £513, tenable in the Faculty of Medical Sciences of University College, and in the Medical Schools of University College Hospital, the London Hospital, and the London (Royal Free Hospital) School of Medicine for Women, will be offered. The examination will commence on June 30th next. Full particulars and entry forms may be obtained from the secretary of the Board, Mr. S. C. Ranner, the Medical School, King's College Hospital, Denmark Hill, London, S.E. 5.

MENTAL HOSPITAL ADMINISTRATION.

AN IMPORTANT CONFERENCE.

As briefly noted in our last issue a conference, convened by the Chairman of the Board of Control, was held in London at the offices of the Civil Service Commission on April 21st and 22nd for the purpose of considering: (1) the recommendations of the Departmental Committee's report on nursing in county and borough mental hospitals, and (2) the provision of further accommodation in mental hospitals.

The conference was opened by Mr. Neville Chamberlain, Minister of Health, who paid a tribute to the devotion shown by mental nurses in their difficult work, and emphasised the progress which has been achieved in the position and training of the nurses to-day. He reminded the conference of the work instigated by the Medico-Psychological Association in encouraging training and in examining mental nurses, and of the fact that over 17,000 nurses had obtained the Medico-Psychological Certificate in nursing during the last 30 years. The Minister referred to the Mental Treatment Bill for which he himself had been responsible, and to the disappearance of this Bill owing to the General Election of 1923. He led the conference to hope that after the Royal Commission now sitting had issued its report the Government would find means to promote legislation based upon that report.

NURSING SERVICE IN MENTAL HOSPITALS.

The discussion revealed considerable divergence of opinion on several of the recommendations contained in the report of the Departmental Committee, the principal aims of which were at times somewhat overlooked in the consideration of the effect of its details upon local interests. The questions involved are so important to the future and progress of mental nursing that recapitulation of some of the recommendations as set out in the report will not be out of place.

Aims of the Departmental Committee's Report.

In effect the report aims at the standardisation and unification of the nursing service on a national basis and bringing mental nursing into line with general nursing, of which it is an important branch.

A scheme for grading hospitals is put forward with a view to ensuring the development of really efficient training schools at those hospitals whose size, number of admissions, and general facilities offered sufficient scope and material for providing the training which the Departmental Committee regarded as fundamental to the future of the mental nursing service. The recommendations put forward—viz., the appointment of teachers or sister tutors; the adoption of nursing homes, lecture-rooms, &c., and the affiliation of mental and general hospitals, all have this end in view, and the question of reciprocity between mental hospitals is a necessary counterpart of the scheme. Such reciprocity would of necessity entail some sacrifice on the part of the smallest hospitals, but taking a long view it was thought that this would be more than compensated by the output of more and better trained nurses.

Another and important point is that it is only the prospect of a sound training and of a career that will attract applicants of the right educational standard, and, further, the encouragement of training in general as well as mental nursing is the only way to obtain a controlling staff of such integrity and reliability that the public may have complete confidence in regard to the proper care and treatment of mental patients.

The report recognises a distinction between the requirements of the nursing of actual physical and mental disease and the care of the chronic insane and generally healthy patients, and it is suggested that untrained attendants or orderlies could, if required, be employed for the latter. The Committee held that there were often both men and women educationally unfitted to take a nursing certificate who were notwithstanding specially gifted for this work, and that the supervision of the latter class by the trained nurses would present the best guarantee for the care and kindly treatment of the chronic insane.

The Committee took the view that the initial pay offered to probationers was a matter of less moment than the training and prospects in view, but strongly held that there was need for far greater difference than existed between the pay of trained and untrained nurses. A purely relative scale of pay is drawn up to illustrate this and is constructed to correspond with the rise in the pay of general hospital nurses.

Discussion at the Conference.

Dr. M. A. Collins (Bexley), who spoke on the question of remuneration, considered the pay suggested in the report to be inadequate. No doubt this is true as regards the type of nurse whose primary object in taking up the work is not the acquirement of a certificate.

Dr. W. F. Menzies (Cheddleton), in advocating that training should be compulsory, said that mental nurses must be made to feel that they are engaged for, and are getting, a training, and be taught to appreciate what this means for them. He deprecated the practice of having permanent night nurses, and thought that all nurses should take night duty in rotation and as part of their experience. He agreed with the report in advocating the introduction of general trained nurses into mental hospitals.

The conference seemed in favour of providing facilities for mental nurses to obtain a general hospital training. Miss Musson (formerly matron of Birmingham General Hospital) spoke in favour of reciprocity, but insisted on the necessity of mental nurses taking the full course, denying that their training with the limited bedside experience afforded could ever enable them to enter as second-year nurses. No one opposed the suggestion that after a period of probation nurses should be required to enter into a contract, such as applies in general hospitals.

On the important question of the hours of duty, the Report of the Departmental Committee shows a realisation of the varied difficulties involved, and the recommendations made are notably elastic. The conference provided no answer to the severe indictment made in the report against the two-day shift system. Dr. G. Clarke, who spoke in favour of this system, could only say that he did not believe these alleged defects really existed, and in maintaining that with efficient, well-trained nurses this system of dual control and divided responsibility worked satisfactorily, he seemed to ignore the fact that the average nurse of to-day is not of a high educational standard, and is not certificated. Dr. R. Eager (Devon) spoke against the double-day shift, and agreed with the finding of the report that for actual nursing of mentally and physically ill patients the undivided observation, control, and responsibility of the single turn of day duty was more satisfactory both from the point of view of the patient and of the administration of the ward. All will probably agree that the hours of actual and close attendance on very acute cases of mental disease should be curtailed to the utmost possible, and that the atmosphere of an acute mental ward requires regulations framed with the most liberal consideration for the nursing staff.

Dr. Henry Devine (Portsmouth), in speaking on the questions of obtaining suitable candidates and conditions of service, referred to the nursing of mental patients in other countries. He considered that mental institutions should, so far as possible, resemble our modern garden cities, and that those who had the care of the insane should be encouraged to introduce the methods and influences of ordinary life and occupation. He pointed to the fact that, apart from the acute forms of mental disorder, the great majority of patients now under certificate were in good physical health and did not require nursing so much as the companionship and control of persons of a sympathetic personality, chosen for general efficiency in normal associations. He personally thought, somewhat paradoxically, that to improve the mental nurse she must be abolished, and he believed that the general sources of trained nurses could, as abroad, provide mental hospitals with efficient nurses for the treatment of those patients in the hospital really requiring nursing. He suggested that this plan would become practicable if mental hospitals and the present Poor-law infirmaries came under one central committee of the local authority.

The nursing of male patients by women nurses was strongly advocated both by Prof. G. M. Robertson (Edinburgh) and by Miss Perry (matron of Cardiff City Mental Hospital), and the favourable experience of this practice all over Scotland and at Cardiff was placed before the conference. Attention was drawn to the comment in the Departmental Committee's Report that few of those superintendents who were opposed to this practice had ever tried it. On the other hand, in England the great difficulty at present is to obtain female nurses, whereas there is a steady supply of male nurses of a good type.

FURTHER MENTAL HOSPITAL ACCOMMODATION.

On the second day of the conference Alderman J. T. Travis-Clegg (Lancashire) and Mr. M. J. Godwin-King (Hellingly) spoke in regard to the extended use of Poor-law accommodation, and upon the greater use of Sections 55, 57, and 79 of the Lunacy Act, 1890, which deal with sending patients on trial, boarding-out, and discharge to care of relatives. Opinions were expressed against sending mental cases to Poor-law infirmaries and the workhouse observation wards, and the conference clearly deprecated the hardship of the system which prefaced the treatment of mental disorder by pauperisation. The advantages of placing Poor-law infirmaries and mental hospitals under one local authority, and the care of senile dementia without certification were considered.

Admission Hospitals and Convalescent Homes.

In opening the discussion on the provision of admission hospitals and convalescent homes, Dr. G. F. Barham (Claybury) referred to the feeling against the enlargement of existing mental hospitals, and to the views held by some against treating early cases at all at mental hospitals. In view of the large number of cases requiring treatment annually, beyond the scope of any possible provision of clinics, public or private, he held the opinion that properly isolated admission units on the villa system should be regarded as essential at every mental hospital, and that such units offered advantages not obtainable at small clinics. He referred to the schemes for linking up the mental hospitals with general hospitals and schools of medicine in different areas, and believed that thereby the reproach that psychiatry was out of touch with general medicine would be removed. Such provision and such schemes he regarded as essential to the development of mental hospitals, both as centres of treatment, for coöperation in research, and as training schools for mental nurses, and he reminded the conference of the important public service which the mental hospital had to perform, and with what benefit to the large population of these hospitals such an organisation would react. Linked up as a unit of a large medical organisation, he thought that there need be no fear of enlarging existing hospitals by providing admission units, and thereby erecting some of the new accommodation which the Chairman had told the conference was required.

Dr. Edwin Goodall (Cardiff) spoke against the treatment of early cases of mental disorder at mental hospitals. He believed that the prevention of insanity, research, and efficient treatment would never progress elsewhere than at psychiatric clinics attached to general hospitals and schools of medicine. He did not explain, however, how the scattered local requirements of the country, far distant from teaching centres, were to be met, nor how such organisation as he proposed was to cope with the great majority of cases.

Agreement was general as to the need for psychiatric clinics, which it is hoped will tend to diminish the number of cases requiring certification and treatment at mental hospitals. But it would appear that among the majority of experts this opinion in no sense carries with it a desire to impair the highest possible standard of humane and efficient treatment of certified cases—and of many voluntary boarders also, and it is widely held that the tendency to ignore and shut out the mental hospitals in any scheme for developing psychiatric medicine will certainly reduce that standard.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

Surgeons' Fees in the Public Hospitals.

A RECENT incident has focused attention on a state of affairs which has gradually become perplexing and serious. The incident concerned a well-known surgeon attached to one of the most important hospitals. He saw in his own consulting-room a young woman to whom he recommended hospital treatment. She entered the hospital and paid the surgeon a fee, for which transaction he was blamed and the matter ended with his resignation from the hospital staff. There is, of course, much to be said on both sides in such a case, but its importance depends less on its individual merits than on its general significance. It is a local symptom of a constitutional disease. What is probably the crux of the matter is the lack of hospital provision for the middle classes—the people who can pay a moderate fee. At present they have often to choose between hospitals originally intended for the indigent and nursing homes whose charges are high. If we add that the surgeons attached to the public hospitals enjoy a high reputation, while some of the surgeons connected with private nursing homes are not exactly illustrious, it will perhaps be patent why many persons of moderate means find their way into the public hospitals. It is easy to call this state of affairs scandalous, but it is difficult to say who is responsible. There is a movement, which has its enemies as well as its friends, in favour of introducing a hospital tariff, according to which the patient of moderate means would be able to enjoy the benefits of first-class surgery in a public hospital at a charge within his reach. But what is to be the attitude of the first-class surgeon in these circumstances? Shall we see him becoming a full-time official, paid a salary by the hospital and disqualified from charging a fee in or outside the hospital?

The Students' "Strike."

The recent students' "strike," which began in the Faculty of Law of the University of Paris, is now happily ended, much to the credit of the University authorities and to the discredit of those who have been tempted to infuse party politics into the academic field. The origin of the trouble is past history now. The students held that the Government's choice of a lecturer in public international law was based less on the candidate's academic qualifications than on his political views, and they protested to the extent of boycotting the newly-appointed lecturer. Other faculties, including that of medicine, showed their sympathy with their fellow-students of the law, and a general strike throughout the student world of France was urged. The Minister of Public Health then took a serious step in suspending the Dean of the Faculty of Law, Prof. Barthelémy, from his office. It is impossible to say how this strike would have ended had not M. Herriot's Government fallen. Its fall, as far as the strike was concerned, may be regarded as singularly opportune. The new Government has not felt under any obligation to uphold the rulings of its predecessor in this matter, and it has made amends to the University for having interfered with the traditions of its independence. Prof. Barthélemy has been reinstated, and the students found guilty of rioting have been given an official pardon.

Interstitial Injection of Uriage Water.

On the basis that the water of Uriage (Isère) is isotonic with the blood serum, Dr. Larat advocates hypodermic injections of this water in its natural state, containing all its electrical properties, concurrently with other modes of administration. Interstitial injections of this water offer the three following advantages: (1) The ions which it contains carry electrical charges into the tissues; (2) the water has no hæmolytic action on the red blood corpuscles owing to the complete isotony which exists between it and the blood; and (3) the water introduces nascent colloidal sulphur directly into the tissues. The patients on whom this method was tried were suffering from various forms of eczemas, mainly chronic, or chronic rheumatism. 10 c.cm. of water are injected intravenously or subcutaneously every day until the symptoms definitely disappear.

SCOTLAND.

(FROM OUR OWN CORRESPONDENT.)

Rate-Aided Patients as Voluntary Boarders in Mental Hospitals.

IN a recent note on mental hospitals[1] mention was made of the difficulty encountered by the administrators of such institutions when dealing with indigent patients willing to enter the hospital as voluntary boarders. The Scottish Lunacy Act does not prohibit the reception of rate-aided voluntary boarders in mental institutions, but under existing arrangements the local authorities do not receive the lunacy grant for such persons unless they are "pauper lunatics." The parish councils are therefore naturally reluctant to make arrangements for admission to mental hospitals without certification. The board of directors of the Crichton Royal Institution, Dumfries, has taken a forward step in this matter by presenting a memorial to the Secretary for Scotland, praying for a modification of the Scottish regulations in regard to rate-aided cases along the lines of Lord Onslow's Mental Treatment Bill, which was introduced in the House of Lords in 1923, but which, through force of circumstances, was allowed to drop. The memorial puts forward statistics to show the difference between the outlook for voluntary and for certified patients. The recovery-rate at the Crichton Royal Institution of those admitted at their own request exceeds that of the rate-aided certified patients by 9·2 per cent. The memorial considers that a 10–15 per cent. improvement in the results of the mental treatment of rate-aided patients would be a conservative estimate of the benefit which would follow the facilitation of their entry as voluntary boarders. It also points out that the double stigmata of "pauper" and "lunatic" which must be incurred before a poor patient comes under competent mental treatment naturally causes postponement to the last possible moment. The increasing popularity of the voluntary system in this country is one of the most encouraging features of mental work during the last 20 years, and is rightly recognised by all concerned as a most important factor in the public health. The changes in English legislation which are expected to follow the report of the Royal Commission will almost certainly include a movement in this direction. Meanwhile all medical men will wish to support the attempt to secure the removal of a serious defect in the legal position in Scotland with regard to the poorer mental patient.

Diphtheria Prophylaxis in Edinburgh.

The preliminary observations of Dr. M. T. Benson, assistant M.O.H. of Edinburgh, regarding diphtheria prevention are distinctly encouraging. Recently he delivered a lecture, under the auspices of the Leith Parents' Association, giving his results in that work during the past year. The method described was that of inoculating children with a special "toxin-antitoxin" preparation. Three hypodermic injections were given at weekly intervals. In the vast majority of cases this is said to confer immunity for about six years, but the degree of immunity is not at its maximum until six months after the course of inoculations. In Leith Academy some 430 children, from 1 to 11 years of age, were dealt with in January and May of last year. Dr. Benson now reports, 11 months later, that of this group only one child has had diphtheria, and that a very mild attack. Furthermore, it had been noted in the case of this child that after the three toxin-antitoxin injections she had not been completely immunised, and a fourth protective injection had been given. She must therefore be regarded as a very highly susceptible case. In the same school some 120 children under 11 years of age had not been treated, and among these there were five cases of diphtheria reported during the same period, three of them being severe. Thus had the incidence of diphtheria been equally heavy in the two groups (treated and untreated cases), then with 5 cases occurring in the untreated group of 120 children one should have expected 18 cases in the much larger group of 430 treated children. Instead of 18 they had only one very mild case.

As a preliminary to the course of inoculations, the Schick test was carried out. Some 4500 children had the Schick test applied, and of these 65 per cent. between 5 and 10 years of age were found to be susceptible to diphtheria. Of those children between 1 and 5 years of age who were tested, 80 per cent. gave positive reactions. This is the dangerous age for diphtheria, 60 per cent. of the deaths in Edinburgh from that disease occurring in children under 5 years. The toxin-antitoxin inoculations given during this period should therefore be of special value. Fortunately, too, the younger the child the less reaction there is, though in no case has Dr. Benson seen a protective injection followed by severe or permanent ill-effects.

Leith Parents' Association.

In the diphtheria prevention campaign carried out in the past year in Leith great assistance has been given to the medical officer of health by a body known as the Leith Parents' Association. Membership of this Association is confined to parents and guardians of children attending Leith Academy, and the aims in view are "to enable parents to keep in touch with the educational affairs of the Academy and to stimulate interest in the wider aspects of education generally." The Association, which was founded in 1920, appoints "parent representatives" on the School Committee, and throughout the winter holds a series of lectures and social evenings. At present it has 190 members. This Association made it easy last year for Dr. William Robertson, M.O.H., to address the parents collectively on advisability of a campaign against diphtheria. His suggestions had all the more appeal, as a serious outbreak of diphtheria in the school in May, 1923, had affected between 30 and 40 children. The Schick test and toxin-antitoxin inoculation were explained, and, as a direct result, the parents of about four-fifths of the children agreed to allow them to be inoculated. The existence of similar associations in all schools could hardly fail to be a powerful adjuvant to public health administration in the country.

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[1] THE LANCET, April 11th, p. 788.

Obituary.

ARTHUR JOSEPH EAGLETON, M.D. LOND., M.R.C.P. LOND.,

BACTERIOLOGIST TO THE NEWARK EYE AND EAR HOSPITAL, NEWARK, U.S.A.

THE many friends of Dr. Arthur Joseph Eagleton will regret to hear of his death recently at Newark, U.S.A., at the early age of 34.

Dr. Eagleton went from Rugby to Guy's Hospital, and graduated M.B., B.S. Lond. in 1913. He became pathological assistant to the surgical registrar in 1913 and was awarded the Golding Bird gold medal for bacteriology. While holding a house appointment at Guy's in August, 1914, he volunteered on the first day of the war and received a commission a few days later, when he went to France. He became bacteriologist to the Third General Hospital, B.E.F., and was also in the Fifteenth Field Ambulance. Later he became a specialist in cerebro-spinal fever in one area of England, publishing an article on the occurrence of meningococci in the air of army huts. After the war he gained the M.D. Lond. (in 1918), and he took charge of the bacteriological department of the Wellcome Physiological Research Laboratories, where he remained until 1923, when, finding it necessary to avoid the winter in England, he went as bacteriologist to the Newark Eye and Ear Hospital. Prior to his departure he had been secretary to the Pathological Section of the Royal Society of Medicine. He published several papers giving the results of his careful investigations into methods of standardisation of tuberculin, on the Schick test and active immunisation against diphtheria, and into the virulence of diphtheria bacilli. His work, particularly in connexion with the standardisation of tuberculin and the virulence of diphtheria bacilli, had already placed him amongst the most promising of the younger group of pathologists. In America he had commenced a lengthy series of well-planned observations and experiments on the diagnosis and treatment of ophthalmic tuberculous conditions and on protein sensitisation, and had carried the investigation far despite the handicap of considerable ill-health. His premature death deprives pathology of a keen worker of careful judgment who promised to make further contributions of great value to bacteriology.

His unselfish kindliness, sincerity, and his high personal ideals gained him the affectionate regard of his colleagues and of those who worked under him. He will be missed by a large circle of friends.

CHARLES ALFRED RAYNE, M.D. LOND.

BY the death of Charles Alfred Rayne, at his residence in Lancaster on April 17th, at the age of 79, the borough of Lancaster loses its oldest medical practitioner. He studied at University College, London, qualified as M.R.C.S. in 1873, and in the same year took the M.B. of London University with honours in all examinations, and the M.D. in 1887. Before settling in Lancaster over forty years ago he had a varied experience as demonstrator of pathology in the University of Oxford, as an assistant physician of the Children's Hospital, Manchester, and resident physician at the Radcliffe Infirmary, Oxford. For 32 years he was honorary medical officer of the Royal Infirmary, Lancaster, and later honorary consulting physician. As early as 1875 he contributed a paper to THE LANCET on Animal Heat in its Relation to Temperature Alterations in Certain Injuries and Diseases of the Nervous System, and in 1876 a paper on the Influence of Hydrate of Chloral in Certain Forms of Convulsive Disorders, and again in 1889 a paper entitled What is Life? In THE LANCET, 1903, he described a treatment of goitre by the use of distilled or rain-water.

Public Health Services.

HEALTH OF THE CITY OF LONDON.

THE resident population of the City of London is so small—viz., 13,300 (to be compared with a day population of over 364,000)—that the statistics fluctuate much from year to year. Births during 1924 numbered 94, deaths 151, and deaths of infants 11, equivalent, respectively, to rates of 7·1, 11·3, and 117. In his report for this year Dr. William J. Howarth deals with many interesting subjects.

The decreasing number of dwellings suffer in their sanitary environment from the obstructive effect of the increasing number of high business premises and warehouses. The workers wish to live near their work, but suitable sites cannot be found for them within the City boundaries. Accommodation is needed for the housing of some 1500 persons, mostly living in houses unfit for human habitation. As a beginning a site has been purchased in Shepherdess-walk, Shoreditch, which will house about 500 persons. It is estimated that this first instalment will cost about £95,000 and will involve a charge of about one-ninth of a penny on the City rates for 60 years. The Sanitary Committee recommend that no Government contribution be applied for, but that the whole cost be borne by the City.

A system of voluntary registration of barbers' shops was begun in 1904. At one time there were 32 such establishments on the register; the number is now reduced to five, as most of them have been transferred to the Statutory Register, provided under the L.C.C. Acts of 1915 and 1920. Dr. Howarth points out that the amount of deposit falling in the City from atmospheric pollution in the month of July only was 53·6 tons. He says "the cost of electricity is still far too great for its general use," but that he "believes the substitution of gas for coal and coke in restaurants and business premises is practicable and might be more generally adopted if the gas companies encouraged its greater use" by arranging a special rate for such premises. During excavations in Farringdon-street a considerable quantity of human remains was found at a deep level, possibly indicating the site of an old burial ground for St. Bride's parish. Out of 39 samples of milk tested for tubercle five (or 12·8 per cent.) gave a positive result. The precautions taken in milk sampling to obtain a fair sample without contaminating the milk are described.

As usual, Dr. Howarth devotes much space to the questions concerned with the meat-supply. During the year caseous lymphadenitis, a condition simulating tuberculosis, was found to be unduly prevalent among sheep carcasses received from Argentina. The total number of carcasses found to be affected during the first nine months of the year was 88, not a large proportion, as Dr. Howarth points out, among the 70,000 tons of carcasses received. The lesions were chiefly located in the prescapular (51) and precrural (25) lymph glands, indicating the generalisation of the disease. This disease is not uncommon in Australia, but fewer cases were found among Australian carcasses, owing to the system adopted at the time of slaughter, of careful palpation of the lymph glands in the prescapular, precrural, and superficial inguinal regions. Consignments of chilled beef have been received from Canada. This meat is carried at only 2° or 3° below freezing-point and remains unfrozen. It does not require preliminary thawing or exude juice on cutting, and a period of only 12 or 13 days elapses between slaughter and sale in the market. The meat was in excellent condition, but the carcasses might have been of primer quality. It is stated, however, that a loss was sustained on this attempt to establish a Canadian chilled meat trade, and that it is more profitable to send the live animals to Birkenhead. The Netherlands Government have recently issued an order prohibiting the importation of meat from countries which have no national system of meat inspection, and arrangements are being made through the Ministry of Health to comply with these regulations as far as the abattoirs at Aldgate and Islington are concerned. At the invitation of the Netherlands Government, a deputation from the City Corporation visited Holland in April, 1924, to observe the methods of meat inspection adopted there. As a means of determining the frequency of antenatal tuberculous infection in calves, a careful record is being kept of the location of tuberculous lesions in calves under the age of 5 months, and it is hoped in future to be able to classify the cases in three sections—viz., (*a*) those obviously postnatal; (*b*) those probably antenatal; and (*c*) those doubtful in origin. An analysis of the organs affected in the case of 79 cows, all under the age of 9, showed that in 23—i.e., 29·1 per cent.—the udder was affected.

In accordance with the recommendation of the Departmental Committee on meat inspection, the unequalled educational opportunities afforded by Smithfield Market are to be used systematically for the training of meat inspectors. Trial lectures have already been held, with a very good attendance. No charge will be made for the lectures. The quantity of meat passing through Smithfields in 1924 was the highest ever known—480,520 tons. Of this amount 21·8 per cent. was British and Irish, 46·8 per cent. from Argentina, 18·9 per cent. from New Zealand and Australia, and 12 per cent. from Holland and other sources. British meat still shows the lack of systematic meat inspection in the country. "The quality, grading, and dressing of Australian beef were, with exceptions, still far from being in the same class as Argentine beef." Many of the quarters of Australian beef were from aged cattle and many of the carcasses of mutton were those of old ewes, no doubt retained for their wool value. New Zealand mutton and lamb maintained its reputation, but the beef was a negligible quantity, generally from old cows and very badly dressed. Holland takes pride of place for depositing in Smithfield the right type of pig carcass, with a long back and loin and short plump legs, from a pig which arrives quickly at the desired weight. Intending British pig-breeders are advised to take this type as a model. The Court of Common Council lodged a protest with the Ministry of Health against the proposals contained in the Factories Bill of 1924, which would have transferred some of the existing powers of control from the sanitary authorities to the factory inspectors.

Rat repression has received attention, but Dr. Howarth lays stress on the weak part of the Act, by which the responsibility for necessary structural alterations is not thrown on the owner and also the difficulty arising from multiple occupancy. Reference is made to the method of locating the body of a dead rat by releasing blue-bottles in the room and watching where they settle. Unfortunately, the trouble in the City with dead rats usually arises in the winter time, says Dr. Howarth, when blue-bottles are not procurable. Another method, available when there is a ceiling below, is to look for a patch of discoloration. Notwithstanding the unsatisfactory state of the law, the various measures of rat repression adopted appear to have prevented an increase in the rat population of the City.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED APRIL 18TH, 1925.

Notifications.—The following cases of infectious disease were notified during the week, namely :—Small-pox, 135; scarlet fever, 1513; diphtheria, 815; enteric fever, 36; pneumonia, 1344; puerperal fever, 74; cerebro-spinal fever, 14; acute poliomyelitis, 2; acute polio-encephalitis, 1; encephalitis lethargica, 52; continued fever, 1; dysentery, 3; ophthalmia neonatorum, 120. There were no cases of cholera, plague, or typhus fever notified during the week. The number of small-pox cases showed a decrease of 14 from the number for the preceding week.

Deaths.—In the aggregate of great towns, including London, there were 3 deaths from enteric fever, 134 from measles, 13 from scarlet fever, 114 from whooping-cough 27 from diphtheria, and 162 from influenza, as compared with 221, 242, 281, and 304 in the four preceding weeks. In London itself the deaths from influenza numbered 16, from whooping-cough 30, and from diphtheria 8.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Lt. T. N. D'Arcy to be Surg. Lt.-Comdr.

ROYAL NAVAL VOLUNTEER RESERVE.

Proby. Surg. Sub-Lts. to be Surg. Sub.-Lts.: C. M. Brooks, M. J. Arnott, and D. R. F. Bertram.

ROYAL ARMY MEDICAL CORPS.

Lt.-Col. E. E. Parkes, half-pay list, late R.A.M.C., is restd. to the estabt.

RESERVE OF OFFICERS.

Maj. A. E. Thorp, having attained the age limit of liability to recall, ceases to belong to the Res. of Off.

TERRITORIAL ARMY.

Lt.-Cols. C. I. Ellis and E. C. Montgomery-Smith (from R.A.M.C., T.A.) to be Cols.

Capts. R. J. Bruce (late R.A.M.C.) and R. J. W. A. Cushing (late R.A.M.C., T.A.) to be Capts.

Lt. A. Pain to be Capt. J. O. Moffat to be Lt.

TERRITORIAL ARMY RESERVE OF OFFICERS.

Maj. J. A. Morris (late R.A.M.C., T.A.) to be Maj.

ROYAL AIR FORCE.

Flight Lt. F. E. Johnson is granted a permanent commission in the rank stated.

Flight Lt. R. H. Waco relinquishes his temporary commission on ceasing to be employed.

INDIAN MEDICAL SERVICE.

Capts. E. Calvert, R. Sweet, F. Phelan, Nawin Chand Kapur, Narayan Krishna Bal, and Haji Sulaiman Gulamhossein Haji to be Majs.

Temp. Lts. Jagdish Sahai, Har Sarup Gupta, and Piyare Lal Burman to be Temp. Capts.

Satya Raju Chittoory to be Temp. Lt.

The King has approved the retirement of Col. F. Wall, and Lt.-Cols. E. C. C. Maunsell and F. D. S. Fayrer.

Lt. Birendra Nath Hajra relinquishes his temp. commission.

Homi Edulji Variava and Muthu Ramkrishna Grandhi are granted the rank of Capt. on relinquishing their temp. commissions.

DEATHS IN THE SERVICES.

Surgeon Vice-Admiral Sir Arthur William May, who died on April 21st, in his seventy-first year, at his residence in Cornwall, was a late Director-General of the Medical Department of the Royal Navy. The son of the Rev. H. T. May, Fellow of New College, Oxford, he was educated at Sherborne School and at King's College Hospital and, after qualifying in 1878, entered the Royal Naval Medical Service as surgeon. He was on active service in the Egyptian War of 1882 and was awarded the medal and Khedive's bronze star. He also took part in the Suakim Expedition two years later, and with the Nile Expedition for the relief of General Gordon. For services under Sir Charles Beresford for the relief of Sir Charles Wilson he was mentioned in despatches, having distinguished himself in ministering to the wounded under fire. On his return home he was appointed surgeon of the R.M.L.I. at Portsmouth and subsequently served in Australia; in the cruiser *Volage*, in the training squadron; at the Naval Hospital, Gibraltar; at Devonport; and in the battleship *Empress of India*. From 1901 to 1904 he was P.M.O. of the training ship *Britannia* at Dartmouth, and later took charge of the hospital at Gibraltar. Having reached the rank of Deputy Inspector-General, he was appointed Deputy Inspector of the Medical Department at the Admiralty in 1905, and after holding charge of the Royal Naval Hospitals, first at Portsmouth and afterwards at Chatham, he succeeded Sir James Porter in 1913 as Director-General, retiring in 1917. After the war he became closely associated with the Comrades of the Great War Association and with the British Legion, of which he was national vice-president. Sir Arthur May, who was Hon. Physician to the King, a deputy lieutenant and a magistrate for Cornwall, was awarded the C.B. in 1911 and promoted to K.C.B. in 1914. He was also a Knight of Grace of St. John of Jerusalem and held the Belgian Order of Leopold and the Japanese Order of the Sacred Treasure of the first class. He married, in 1892, Adelaide, a daughter of William Baldock, of Cooling Castle, Kent.

Correspondence.

"Audi alteram partem."

APPENDICITIS AND THE APPENDIX STUMP.

To the Editor of THE LANCET.

SIR,—The correspondence which followed Mr. Rendle Short's excellent clinical lectures on appendicitis (THE LANCET, Jan. 31st and Feb. 7th) dealt mainly with diagnosis and post-operative treatment of the disease, and a point in operative technique passed unchallenged. Mr. Rendle Short states that "the stump of the appendix must be securely buried or otherwise shut off from the peritoneal cavity. It is useless to trust to drainage to make good any deficiencies in this direction." But, in two of the most recent text-books of the day these paragraphs occur: "It is not always wise to attempt invagination of the stump owing to the danger of disturbing adhesions, and it is sometimes impossible if the inflammatory changes have rendered the tissues of the cæcum very friable"; again, "attempts to accomplish invagination of the stump in face of difficulties had better not be persisted in too long as they may result in the loss of valuable time and unduly prolong the operation" (Taylor); and finally, "in general suppurative peritonitis from perforative appendicitis or from rupture of a circumscribed abscess into the free peritoneal cavity I proceed as follows: Open the abdomen as in a case of primary appendicitis, locate and amputate the appendix to prevent further leakage. All manipulation of the intestine should be avoided" (Murphy).

In the most acute types of the disease, therefore, simple ligation and amputation of the appendix is not only recognised as a safe procedure, but some surgeons consider it the method of choice. The question then arises as to whether invagination of the stump is ever necessary. A debate on this matter was opened by Mr. de Martel at the Society of Surgery in Paris in December, 1921. At the end of three months' discussion no unanimity was reached, for each side massed their thousand cases in support of their views.

The "non-buriers" of the stump hold that an abscess not infrequently forms in the wall of the cæcum due to the enclosure of the stump in a closed cavity, or from actual perforation of the cæcal wall by the loops of the invaginating suture. Mr. de Martel stated that his experiments on the cadaver showed that the perforating point in the cæcum was not possible to avoid even by the most adroit surgeons. The mildest result of this may be a localised abscess in the abdominal wall. A perusal of this discussion makes clear that invagination of the stump is an unnecessary manœuvre, that simple ligation with adequate disinfection is quite sufficient. Even the "buriers" admitted that rigorous disinfection made invagination unnecessary and that the simpler method was preferable to inefficient burying of the stump. In America Shelton Horsley has advocated this method for many years, and in his work on "Operative Surgery" there is an instructive illustration showing the fate of the encapsulated invaginated stump compared with that treated by simple ligation.

In England recently Mr. Patterson, in his interesting presidential lecture on the Lure of the New, asks whether certain methods of technique may not be simplified without loss of efficiency. In appendicectomy he states that in acute cases he simply ligatures the appendix and cuts it off to gain precious time, while in the chronic he considers invagination of the stump quite unnecessary from the point of view of safety, though it is neat and may diminish the risk of adhesions.

For over 20 years we invaginated appendix stumps, but for the last five years we have used this simpler method in every type of appendicitis—from the chronic interval case to the gangrenous type with generalised peritonitis. Simple in the extreme, for often two ligatures suffice, one through the meso-appendix, the other round the base of the appendix, this method has never given us any anxiety, no fistula has resulted, nor any post-operative complication. The occasional pricking of vessels in the cæcal wall with the formation of the troublesome hæmatoma sometimes seen is avoided, while the operator is freed from the misdirected efforts of an assistant pushing in an obstinate stump, which sometimes refusing to be easily invaginated seems to ask simpler treatment. The sterilisation, however, must be carefully done by cautery, pure carbolic acid, or iodine, it seems immaterial which agent is used. As all our patients have been private cases we have been obliged to follow their convalescence personally, and we are convinced that this method reduces post-operative flatulence to a minimum; it is, in fact, usually absent, probably because so little manipulation of the cæcum is needed with this technique.

Our experience therefore leads us to think that far from being a deficient method, simple ligation of the appendix with adequate sterilisation of the stump is the method of choice in every type of the disease.

We are, Sir, yours faithfully,

IAN MACDONALD.
W. A. MACKAY.

Huelva, Spain, April 20th, 1925.

SCARLATINIFORM RASHES IN INFLUENZA.

To the Editor of THE LANCET.

SIR,—With reference to Dr. Charles Birch's communication concerning cases of influenza masked by scarlatiniform rashes I should like to record the following interesting case.

A patient, a male aged 30, was seen by me during the recent influenza epidemic. He complained of aching pains all over the body and especially in the larger joints. There was intense headache and general malaise. Temperature 102° F. Tongue thickly furred. Influenza was diagnosed. Two days later he developed a blotchy erythematous rash, appearing first on the neck, chest, and upper limbs, spreading to the abdomen and lower limbs later. The rash eventually appeared on the face which, meantime, had been deeply flushed.

The skin over the whole body remained thus affected for three days, when the rash rapidly disappeared, leaving a brownish mottling which cleared at the end of a week. The buccal mucosa was red, swollen, and velvety; the tonsils inflamed. The throat was slightly painful—more so on deglutition. Red papillary patches appeared here and there on a tongue previously thickly coated with white fur.

The diagnosis of influenza was maintained throughout, even though the rash and certain other features of the case suggested otherwise, because I considered the illness differed atypically from scarlet fever in several important respects. There was no exfoliation, and the patient made a speedy and uninterrupted recovery. No case of scarlet fever occurred afterwards, and Dr. Yeoman, M.O.H. for the district, who saw the case and substantiated my findings and diagnosis, informed me that there had been no other cases of scarlatina before or after in the immediate vicinity. The drug treatment precluded any possibility of the rash or symptoms being due to that source.

I am, Sir, yours faithfully,

DONALD M. SUTHERLAND, M.B., Ch.B.

Stokesley, Yorks, April 27th, 1925.

CLIMATOLOGICAL CONGRESS.—From August 17th to 22nd a Climatological Congress will be held in Davos, Switzerland, arranged by the local Research Institute. The subject of the Congress will be the Significance of Climate in its Physical, Physiological, and Therapeutical Aspects. Those desirous of contributing papers on any branch of the subject in which they are specially interested, or wishing further particulars concerning the programme and arrangements, are invited to communicate as soon as possible with the Secretary of the Congress, Dr. Vogel-Eysern, Davos-Dorf, Switzerland.

Medical News.

University of Cambridge: *Examination for the Diploma in Public Health.*—The following candidates have now satisfied the examiners in both parts of the examination:

John A. Charles (distinguished in the principles of hygiene, distinguished in the application of sanitary science), Duncan C. de Fonseka, George K. Fulton, Sidney M. Hattersley (Emm), Hugh A. Sandiford, and Arthur J. Smyth (Emm.).

University of Glasgow.—At the graduation ceremony held on April 22nd the following medical degrees were conferred :—

M.D.—James L. Halliday (high commendation), Hector M. Walker (commendation), Hugh C. Davies, Thomas D. Hunter, and Alexander H. Stewart.

M.B., Ch.B.—With honours: Raymond A. Currie, Morton A. Foulis, and James A. Imrie. With commendation: Robert N. Walker, Charles M. Morton, Robert G. Hutchison, Cecil W. Anderson, Robert Ramsay, James M. Stobo, Edna W. Bruce, Peter D. Thomson, Arthur G. M. Murdoch, Robert S. Hynd, and Henry J. Scott.

Malcolm Allan, Bessie R. Barr, John Bair, Michael J. Bastible, Daniel M. Bell, Joseph A. Bell, Norman L. Bennie, Ann K. Black, Alexander D. Boyd, William Brock, Alexander R. Brown, Douglas Brown, Hamilton Brown, David R. Campbell, Alexander Clark, Alexander F. Clark, John S. Clark, Douglas H. Clutterbuck, Edgar Cochrane, James M. Cormack, Elizabeth Coupland, John Craw, James Crawford, Cochrane Cross, James Cunningham, Janet B. Cunningham, Maurice Curran, Eileen M. Deane, Robert C. Deans, Malcolm C. Douglas, George D. Drever, Lucy M. Dron, William W. Ferguson, John W. Ferrie, Alexander J. Finlayson, John D. Finlayson, John Flynn, John C. Forsyth, John M. Forsyth, Charles A. I. Fuge, Elizabeth S. Galbraith, William D. Gillespie, Thomas L. Gordon, Robert G. R. Grieve, James B. Harrower, Robert Harvey, Ellen M. Hegarty, James Hill, George Hutcheson, Thomas Imrie, Robert F. Innes, Dora Karnovski, Donald H. Kinmont, Neil M. Lees, Alexander Leiper, Moses Lurie, Thomas B. M'Aleer, Donald A. P. Macalister, Archibald MacArthur, Ian E. MacArthur, James O. Macarthur, Alexander G. M'Callum, Duncan M'Callum, Neil M'Diarmid, Peter A. M'Dougall, David T. M'Gibbon, Joseph MacGowan, Eneas J. MacIntyre, Neil D. Mackinnon, Alexander MacLachlan, Sydney H. P. M'Lauchlan, Neil M. MacLean, Elizabeth V. MacLeod, Hector A. Macmillan, William M'Millan, Angus S. M'Neish, Thomas S. Meighan, William Meiklejohn, Isomay Mitchell, James Munn, David S. Murray, James A. Murray, Stanley D. S. Park, John Paterson, William Paterson, John Peter, Margaret I. Prangnell, Leslie W. Quelch, Hugh C. Reid, Thomas G. Rennie, Andrew Roberts, Guy S. Robertson, Gertrude R. S. G. Smith, Hugh Smith, John Smith, John T. Smith, William H. Smith, William F. Stalker, Gilbert R. Stark, Norah M. Steele, Thomas J. Steven, William R. M. Stevenson, Malcolm Stewart, Thomas F. Strang, Daniel Struthers, John W. Struthers, William Taft, Matilda D. Tennent, David Thomson, James Thomson, Agnes B. T. Warden, John Warren, Alexander W. Watt, James D. Wilson, John Wilson, George M. Wyburn, and James Young.

On April 21st Bellahouston gold medals for eminent merit in theses for the M.D. were awarded to George A. Allan, David Campbell, and Robert D. Gillespie.

University of London.—A lecture on the Projection of the Retina in the Brain will be given at Charing Cross Hospital Medical School by Dr. B. Brouwer, professor of neurology in the University of Amsterdam, at 5 P.M. on Friday, May 15th. The lecture will be delivered in English, and Mr. J. Herbert Fisher, senior consulting surgeon, Moorfields Eye Hospital, will take the chair. Four lectures on Chemical Control of Certain Bodily Functions will be given at St. Bartholomew's Hospital Medical College by Dr. H. H. Dale, F.R.S., on May 15th, 19th, 22nd, and 26th, at 5 P.M. At the first lecture the chair will be taken by Sir Holburt Waring. Admission to these lectures is free.

Thomas Smythe Hughes Medical Research Fund.—Applications for grants from this Fund, accompanied by the names and addresses of two references, must be made to the Academic Registrar of the University (from whom further particulars may be obtained) not later than June 15th.

Fellowship of Medicine and Post-Graduate Medical Association.—A special course in Infants' Diseases, for medical officers of welfare centres and others, will be given at the Infants Hospital, Vincent-square, Westminster, from May 18th to 30th. Copies of the programme may be obtained from the Secretary of the Fellowship, 1, Wimpole-street, London, W.

The Fellowship will begin a summer session of lectures at the house of the Royal Society of Medicine on Thursday, May 7th, when Sir Henry Gauvain will give a lantern lecture on Heliotherapy in Surgical Tuberculosis at 5.30 P.M.

Indian Medical Service Dinner Fund.—The annual dinner of the Indian Medical Service will be held at the Trocadero Restaurant on Wednesday, June 17th, Lieut.-Colonel A. W. Alcock, F.R.S., in the chair. Tickets and all particulars may be obtained from the joint honorary secretary, Colonel J. J. Pratt, I.M.S. (ret.), 18, Nevern Mansions, Warwick-road, London, S.W. 5.

Royal Commission on Lunacy and Mental Disorder.—The next meetings will be held at 5, Old Palace Yard, Westminster, on May 4th and 5th, beginning at 10.30 A.M. each day.

Queen Mary's (Roehampton) Hospital.—On Wednesday, May 6th, at 3 P.M., H.M. Queen Mary will open the extension of the hospital at Roehampton House, Roehampton, S.W.

The Chemists' Exhibition and Empire Drug Trade Mart will be held from Monday, May 4th, to Friday, the 8th, at 11 A.M. to 8 P.M., at Holland Park Hall, Holland Park Avenue, London, W.

Royal Commission on National Health Insurance.—The twenty-fifth meeting of this Commission was held at the Home Office, Whitehall, on April 23rd, Sir Andrew Duncan in the chair. Evidence was given on behalf of the National Sailors' and Firemen's Union by Mr. Chambers, who dealt with the special arrangements for seamen. The Loyal Order of Ancient Shepherds, represented by Mr. John Grieve, Deputy Chief Shepherd, and Mr. A. J. E. Saunders, General Secretary, were examined on questions of extensions of benefit, pooling of surpluses, organisation of branch societies, &c. The Association of Approved Societies, representing about 150 societies and 1,500,000 members, gave evidence through Mr. J. E. Hilton, Mr. Robert Smith, and Mr. F. A. Goodwin on matters affecting their constituent societies. Thereafter Miss Amy Cameron and Miss Margaret Hamilton were examined on behalf of the Standing Committee of Scottish Insured Women as to a variety of matters affecting women's interests in health insurance. Proof copies of the oral evidence and the relative statements submitted at the meeting of March 20th and April 2nd are now on sale at H.M. Stationery Office (1*s.* 6*d.* and 2*s.* 3*d.*).

International Society of Medical Hydrology. The annual general meeting of this society, attended by the representatives of eight countries, took place in Paris, April 20th–21st. Dr. Gustave Monod (France) was elected President for the year in succession to Dr. Fortescue Fox (England). On the motion of Dr. Van Breemen (Holland), a committee was appointed to report upon the incidence of chronic rheumatic diseases in Northern Europe as shown by official returns in England and Sweden, and upon their treatment by physical methods. The following subjects were discussed in Prof. Carnot's laboratory at the Faculté de Médecine: (1) Insulin Treatment in Relation to Medicinal Waters, introduced by Drs. Chabanier (France), Poulton (England), and Epstein (New York); (2) the Spa Treatment of Rheumatism of Traumatic Origin, introduced by Drs. Schmidt (Czecho-Slovakia) and Vincent Coates (England). Demonstrations and lectures were also given at the Ecole de Médecine and the Collège de France by Dr. Lepape and Prof. Desgrez. The society was entertained at a banquet by the Bienvenu français. An invitation was received from Czecho-Slovakia to hold the next annual meeting of the society in that country.

Irish Free State: Travelling Fellowships in Public Health.—The conditions of the Travelling Fellowship in Public Health offered by the Rockefeller Foundation have been published. Three Fellowships are offered in anticipation of the appointment of county medical officers of health under the Local Government Act, 1925. The Fellowships are open to any duly qualified medical practitioner of Irish nationality or parentage who holds a registered or a registrable diploma or degree in sanitary science, public health, or State medicine. The Minister for Local Government of Public Health will set up a committee of experts to consider the applications and to select the most suitable candidates for these Fellowships. The selected candidates will be required to submit to medical examination and to give an undertaking to act, if appointed, as county medical officer of health for a period of at least three years at an initial salary, or combined salaries, of not less than £800 per annum inclusive, with an allowance for travelling expenses. Applicants for the Fellowships must furnish particulars of general educational attainments, professional qualifications, and experience in public health work, age, state of health, service in the National Army, knowledge of Irish, and testimonials of character. The candidates who are selected for travelling Fellowships must be prepared to go to America towards Sept. 1st, so as to arrive at the beginning of the academic year. The course of studies will occupy a period of about eight months.

A DINNER in aid of the funds of the Infants Hospital, Vincent-square, will be held at the Guildhall on May 8th, at 7 for 7.30 P.M., Prince Henry presiding.

UNIVERSITY OF BIRMINGHAM.—The Ingleby lectures will be delivered on May 6th and 13th, at 4 P.M., in the Medical Lecture Theatre, Edmund-street Buildings, by Dr. J. G. Emanuel, on Auricular Fibrillation. Members of the medical profession are invited to attend.

INSTITUTE OF PATHOLOGY AND RESEARCH, ST. MARY'S HOSPITAL.—A course of lectures on Pathological Research in its Relation to Medicine has been arranged for the summer session. These lectures are being given in the Lecture Room of the Bacteriological Department of the Institute on Thursday afternoons at 5 P.M. Sir Almroth E. Wright, F.R.S., delivered the first lecture on April 30th on Chemo-therapeutical Agents. Subsequent lectures will be as follows: May 7th, Prof. W. E. Dixon, F.R.S., Cerebro-Spinal Fluid with Special Reference to Pituitary Secretion. May 14th, Mr. A. T. Glenny, B.Sc., the Principles of Immunity as Illustrated by Protective Inoculation against Diphtheria. May 21st, Prof. E. W. Macbride, F.R.S., the Inheritance of Acquired Qualities. May 28th, Dr. W. E. Gye, the Filterable Viruses. June 4th, Sir Arthur Keith, F.R.S., the Structural and Functional Disorders of the Great Bowel. June 11th, Prof. J. Joly, F.R.S., Radiology. June 15th, Dr. R. Robison, F.I.C., the Chemistry of the Calcification of Bone. These lectures are open to all members of the medical profession and to all students in medical schools without fee.

THE LATE DR. J. DON.—James Don, M.D. Aberd., of Newcastle, who died, aged 61, on April 23rd, after a short illness, was honorary senior surgeon to the Newcastle Throat and Ear Hospital and had been connected with that institution for about 30 years. Born in Aberdeen, he graduated M.B., C.M. at the University of his native town in 1888, and obtained the M.D. with honours in 1890. Two years later he went to Newcastle, where he set up in general practice; he was particularly attracted towards throat and ear work, and for the past four years he devoted himself exclusively to that special branch of medicine. Dr. Don took an active interest in medical politics. He was secretary of the North of England branch of the British Medical Association for about ten years, terminating his office last year, and he was at one time chairman of the Newcastle branch. During the war Dr. Don acted as aural surgeon at the Pendower V.A.D. Hospital, and was secretary of Medical War Committee. A member of the Panel Committee, his activities brought him into direct connexion with most doctors in the two northern counties.

PUBLIC HEALTH PROPAGANDA.—The Minister of Health received on April 23rd a deputation from the Society of Medical Officers of Health, introduced by Dr. John Wheatley. The deputation represented that they in their capacity of men of scientific training, in constant touch with the general public, thought that statutory provision should be made for local authorities to carry on health propaganda, and as a next stage a central body should be set up to advise local authorities on the matter. The society thought that in their special position they would be able to give valuable help to such a central body, and that medical officers of health should themselves be included in its membership. The Minister, in reply, said that he fully agreed with the deputation as to the necessity for propaganda on health questions, and he gave his assurance that he proposed to take steps to have the necessary powers conferred on local authorities forthwith. He also agreed that some sort of central body could give valuable assistance; and when the necessary legislation had been passed he would give careful consideration to the question of the proper constitution of such a body and the functions which should be assigned to it.

REPORTING OF MENTAL DEFECT.—Circular 1359, just issued by the Board of Education to local education authorities, deals with Reports on Mentally Defective Children. "In view of the importance of correct diagnosis" (in the words of the circular) a new Form 308M. is introduced to take the place of Schedule F, which the Board require to have completed in certain cases of mentally defective children. The new form does not differ much from the old, except that more details are expected, the suggestion being made that part of the information required may be collected by someone other than the certifying officer. Alternative forms from local authorities who desire to use their own will not be refused, provided the information given is substantially the same. A revised Form 41D., incorporating certain recognised scholastic attainment tests, is also issued, to be filled up by head teachers for the information of the certifying officer. Form 311M. is the form of the medical certificate prescribed by the Board for the purpose of notification of an idiot or an imbecile to the local authority under the Mental Deficiency Act, 1913. Form 312M. is a similar certificate for use when notifying a moral imbecile. These two forms also accompany the circular, which goes on to draw the attention of local authorities to their legal obligations of first referring to the Board all cases—other than idiots, imbeciles, or moral imbeciles (unless they are blind or deaf)—before notifying to the Mental Deficiency Committee. A warning is also sounded that in view of the definition of "moral imbeciles" in Section 1 (*d*) of the Mental Deficiency Act, 1913, it is only in rare and exceptional circumstances that a child of school age could properly be certified as a "moral imbecile." Copies of these forms can be obtained on application to the Board of Education, Medical Branch, 54, Victoria-street, London, S.W. 1.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

THE BUDGET.

PARLIAMENT reassembled after the Easter recess on Tuesday, April 28th. Mr. CHURCHILL, Chancellor of the Exchequer, introduced the Budget in the House of Commons. In the course of his statement he said the total national expenditure for the year 1925–26 was estimated at £799,400,000, being £9·4 millions more than last year's Budget estimate and £3·7 millions more than the actual expenditure of last year. In future they ought to aim at a reduction in expenditure of at least £10,000,000 a year. An increase in the motor vehicle duty of £1,250,000 would carry this duty to £17,500,000. It was proposed that Great Britain should resume its international standard as a gold standard country from the date of the Budget statement. Bank of England and Treasury notes would only be convertible into gold coin at the option of the Bank of England. The country had a gold reserve of £153,000,000. Increases in death duties would be proposed which would yield £10,000,000 in a full year and £4·5 millions the first year. The total yield of new taxes would be £10,230,000 in 1925–26 and over £20,000,000 in 1926–27. The surplus for 1925–26 was thus increased by £10,230,000 to £36,830,000, and a permanent addition to revenue was secured worth £20,000,000 more in 1926. Legislation would be proposed making improvements in the machinery for income-tax appeals by charities in this country.

Contributory Pensions.

It was proposed to inaugurate a new scheme of widows pensions and old age pensions which would be contributory and cover broadly the 15,000,000 insured persons within the existing health insurance scheme. These 15,000,000 persons with their dependants comprised 30,000,000, or about 70 per cent. of the nation. The contributions would be from employer and workman 4*d.* per week each, and from employer and workwoman 2*d.* a week each. If these contributions had been made by all persons in the health insurance scheme from the age of 16, a self-supporting scheme would afford pensions of 10*s.* a week to widows of insured persons together with certain allowances for children and orphans, and secondly, 10*s.* per week to all insured persons and their wives at the age of 65. The contribution from the State required to bring the scheme into operation at once was capitalised at £750,000,000. Reduction of income-tax was proposed, amounting to 6*d.* in the £ on the standard rate, making the rate 4*s.* in the £ instead of 4*s.* 6*d.*

Earned Incomes.

It was also proposed to increase the relief on earned incomes from a deduction of one-tenth, subject to a maximum deduction of £200, to a deduction of one-sixth, subject to a maximum deduction of £250. It was proposed to regard as earned income investment income of taxpayers whose age was 65 years or more and whose total income did not exceed £500. In the case of married persons this relief will be granted when either spouse was of the age stated.

HOUSE OF COMMONS.

TUESDAY, APRIL 28TH.

Medical Examinations of Pensioners.

Mr. W. C. ROBINSON asked the Minister of Pensions how many medical boards were held in the 12 months ending March 31st, 1925; in how many cases were final awards of life pensions issued; in how many cases were final awards given of final weekly allowances; and what was the average period of same.—Lieut.-Colonel G. F. STANLEY (Parliamentary Secretary to the Ministry of Pensions) replied: During the period referred to 288,600 medical examinations were held by the Ministry. During the same period 18,500 final awards of 20 per cent. assessment and over, and 16,000 final awards of final weekly allowances of an average duration of 104 weeks, were notified.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Monday, May 4th.

SOCIAL EVENING: at 8.30 P.M.

At 8.30 P.M., Fellows, Members of Sections, and their friends *will be received by the President, Sir StClair Thomson.*

At 9.30 P.M., Dr. Robert Hutchison will give an address on Dr. Samuel Johnson and Medicine (illustrated with eighteenth century portraits).

The Library will be open, and various objects of interest will be exhibited. Music, light refreshments, and cigarettes.

Tuesday, May 5th.

ORTHOPÆDICS: at 5.30 P.M. (Cases at 5 P.M.)

Annual General Meeting:

Election of Officers and Council.

Wednesday, May 6th.

SURGERY: at 8.30 P.M.

Annual General Meeting:

Election of Officers and Council.

Informal Discussion on

Acute Obstruction of the Small Intestine.

Thursday, May 7th.

OBSTETRICS AND GYNÆCOLOGY: at 6 P.M.

Annual General Meeting.

Friday, May 8th.

CLINICAL: at 5.30 P.M. (Cases at 5 P.M.)

Annual General Meeting:

Election of Officers and Council for 1925-26.

OPHTHALMOLOGY
COMPARATIVE MEDICINE } at 8.30 P.M. (Cases at 8 P.M.)

Discussion on

Diseases of the Eyes Common to Man and Animals.

Openers:

Mr. Humphrey Neame: Parenchymatous Keratitis in Animals.

Mr. Henry Gray: Ulcerative Affections of the Cornea, their Complications and Sequelæ.

Mr. A. F. MacCallan and Mr. Herbert Mason: Cataract in Horses with some Reference to Iritis.

ROYAL INSTITUTION, 21, Albemarle-street, W.

TUESDAY, May 5th.—5.15 P.M., Prof. J. Barcroft: Effects of Climate on the Circulation (III.).

FRIDAY.—9 P.M., Dr. H. H. Dale: *Circulation of Blood in the Capillary Vessels.*

RONTGEN SOCIETY, British Institute of Radiology, 32, Welbeck-street, W.

TUESDAY, May 5th.—8.15 P.M., Mr. C. H. Holbeach, A.M.I.E.E.: Paper on Some further Aspects of the Theory and Operation of Potter-Bucky Diaphragms, and a Note on the Treatment of Coolidge Tubes.

MANCHESTER MEDICAL SOCIETY, University of Manchester.

WEDNESDAY, May 6th.—8 P.M., Dr. A. E. Barclay: Play and a Little Work in Canada and the States.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF PHYSICIANS, Pall Mall East, S.W.

TUESDAY, May 5th.—5 P.M., Dr. E. D. Adrian: The Interpretation of the Electromyogram. (First Oliver-Sharpey Lecture.)

THURSDAY.—5 P.M. (Second Oliver-Sharpey Lecture.)

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

HAMPSTEAD GENERAL HOSPITAL, Haverstock Hill, N.W. *Intensive Course in Medicine, Surgery,* and the Special Departments from 10.30 to 5.30 P.M. daily (second week, as per syllabus).—QUEEN'S HOSPITAL FOR CHILDREN, Hackney-road, Bethnal Green, E. *Special Course in* Diseases of Children. Morning and afternoon sessions (second week).—ST. MARK'S HOSPITAL, City-road, E.C. Special Course in Proctology. Lectures, Demonstrations, and Operations each afternoon (second week).

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen-square, Bloomsbury, W.C. 1.

POST-GRADUATE COURSE: MAY-JUNE.

CLINICAL LECTURES AND DEMONSTRATIONS.

MONDAY, May 4th.—2 P.M., Out-patient Clinic: Dr. Hinds Howell. 3.30 P.M., Syphilis of the Nervous System: Dr. Adie.

TUESDAY, May 5th.—2 P.M., Out-patient *Clinic*: *Dr.* Walshe. 3.30 P.M., Subacute Combined Degeneration and Allied Disorders: Dr. Birley.

THURSDAY, May 7th.—2 P.M., Out-patient Clinic: Dr. Kinnier Wilson. 3.30 P.M., Paths of Intracranial Infection in Otitis Media: Mr. Theodore Just.

FRIDAY, May 8th.—2 P.M., Out-patient Clinic: Dr. Gordon Holmes. 3.30 P.M., *Demonstrations* of Re-educational Methods in Exercise Room: Mr. Elmquist.

Full particulars on application to

J. G. GREENFIELD, Dean of Medical School.

WEST LONDON POST-GRADUATE COLLEGE, West *London Hospital, Hammersmith, W.*

MONDAY, May 4th.—11 A.M., Surgical Registrar: Surgical Wards. 12 noon, Mr. Simmonds: Applied Anatomy. 2 P.M., Mr. *Bishop Harman: Eye Dept.*

TUESDAY.—10 A.M., Medical Registrar: Clinical Methods. 12 noon, Dr. Burrell: Chest Cases. 2 P.M., Mr. Sinclair: Surgical Out-patients.

WEDNESDAY.—2 P.M., Dr. Burnford: Medical Wards. 2 P.M., Mr. Tyrrell Gray: Operations. 2.30 P.M., Mr. Donald Armour: Surgical Wards.

THURSDAY.—10 A.M., Dr. Grainger Stewart: Neurological Dept. 11 A.M., Sir Henry Simson: Gynæcological Wards. 12 noon, Dr. Pritchard: Modern Methods in Medicine.

FRIDAY.—12 noon, Surgical Registrar: Surgical Pathology. 2 P.M., Mr. Vlasto: Throat Nose, and Ear Dept. 3 P.M., Dr. Pritchard: Medical Wards.

SATURDAY.—10 A.M., Dr. Saunders: Medical Diseases of Children. 10 A.M., Mr. Banks-Davis: Operations on *Throat, Nose, and Ear.*

Daily, 10 A.M. to 6 P.M., Saturdays, 10 A.M. to 1 P.M., In-patients, Out-patients, Operations, Special Departments.

UNIVERSITY COLLEGE HOSPITAL.

MONDAY, May 4th.—5.30 P.M., Prof. A. V. Hill: The Physical Environment of the Living Cell.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.

THURSDAY, May 7th.—4 P.M., Dr. Cockayne: Some Urinary Disorders in Children.

INSTITUTE OF PATHOLOGY AND RESEARCH, ST. MARY'S HOSPITAL.

THURSDAY, May 7th.—5 P.M., Prof. W. E. Dixon: Cerebrospinal Fluid with Special Reference to Pituitary Secretion.

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, Leicester-square, W.C.

TUESDAY, May 5th.—5 P.M., Dr. Sibley: Electro-Therapeutics.

THURSDAY.—5 P.M., Dr. Barber: Alopecia Areata and Vitiligo.

UNIVERSITY OF LIVERPOOL POST-GRADUATE LECTURES. (At 3.30 P.M.)

TUESDAY, May 5th.—(At the Southern Hospital.) Mr. H. *Taylor: Functional Paralyses after Minor Injuries* of the Limbs.

WEDNESDAY.—(At the Northern Hospital.) Dr. L. Cunningham: Jaundice.

FRIDAY.—(At the Royal Infirmary.) Dr. John Hay: Raised Blood Pressure.

MANCHESTER ROYAL INFIRMARY.

TUESDAY, May 5th.—4.15 P.M., Dr. W. Fletcher Shaw: Sterility.

FRIDAY.—4.15 P.M., *Dr. C. H.* Melland and Mr. W. R. Douglas: Demonstration of Cases.

Appointments.

HALL, PERCY, L.R.C.P. Lond., M.R.C.S., has been appointed Honorary Actino-therapist to the Mount Vernon Hospital, Northwood.

HUNT, E. RIVAZ, M.D. Camb., M.R.C.P. Lond., Honorary Physician to the Royal Sussex County Hospital, Brighton.

ROSS-KENT, F. D., M.B., Ch.B. Aberd., Assistant Medical Officer of Health of Chester.

THORNLEY, EDITH I., M.B., Ch.B. Glasg., Assistant School Medical Officer, West Riding County Council.

Certifying Surgeons under the Factory and Workshop Acts: PRATT, F. Y., M.D. Dub. (Horncastle), TERRY, R. H., L.S.A., L.M.S.S.A. Lond. (Nelson, Glamorgan), DOUGLAS, W. R., M.B., Ch.B. Manch., F.R.C.S. Eng., an additional Medical Referee under the Workmen's Compensation Act, 1906, for Circuit No. 10, for the purpose of dealing with surgical cases of exceptional difficulty *arising* in those Districts.

Vacancies.

For further information refer to the advertisement columns.

Bath, Royal United Hospital.—Asst. H.S. £120.

Bedford County Hospital.—Asst. H.S. £130.

Birmingham and Midland Homœopathic Hospital and Dispensary.—Res. H.S. £175.

Brighton, Royal Sussex County Hospital.—Hon. Med. Clin. Asst.

Cambridgeshire Tuberculosis Colony.—H.P. at rate of £100.

Carmarthen, Joint Counties Mental Hospital.—Asst. M.O. at rate of £350.

City of London Hospital for Dis. of the Heart, &c., Victoria Park, E.—H.P. at rate of £100.

Coventry and Warwickshire Hospital, Coventry.—Two Hon. Asst. S.'s.

Dreadnought Hospital, Greenwich.—Anæsthetist. 50 guineas.

Durham County Council, Education Dept.—Asst. School Oculist, £600. Also Asst. School M.O. £600.

Eastbourne, Princess Alice Hospital.—Res. H.S. at rate of £175.
Gloucestershire Royal Infirmary and Eye Institution.—Asst. S.
Harefield, Middlesex, County Tuberculosis Sanatorium.—Third Asst. Res. M.O. £100.
Hospital for Epilepsy and Paralysis, Maida Vale, W.—Hon. Asst. P.
Leicester City Education Committee.—Asst. Sch. M.O. £600.
London County Council Mental Hospitals.—Eighth Asst. M.O. £110.
London Homœopathic Hospital, Great Ormond-street, W.C.—Two Anæsthetists. Each £50.
Manchester Royal Infirmary.—Res. Surg. O. £200. Also Surg. Reg. £150.
Metropolitan Hospital, Kingsland-road, N.—Surg. for Diseases of Women.
Mexborough, Montagu Hospital.—Hon. Visiting and Consulting Surgeons.
Middlesex Hospital, W.—P. and Asst. P.
Nottingham General Dispensary.—Res. Surg. £200.
Queen's Hospital for Children, Hackney-road, Bethnal Green, E.—Asst. S.
Richmond, Surrey, Royal Hospital.—Asst. H.S. £100.
Royal Northern Hospital, Holloway, N.—H.S., Joint H.P. and H.S. Each at rate of £70, and Cas. O. at rate of £90. Also P., Dent. Surg., and Asst. Dent. S.
Royal Society of Medicine, 1, Wimpole-street, W.—Secretary. £800.
Ruthin Castle (Duff House), North Wales.—Jun. Res. P. £150.
St. Mary's Hospital for Women and Children, Plaistow, E.—Res. M.O. and Asst. Res. M.O. at rate of £175 and £130 respectively.
Salford Royal Hospital.—Hon. P. and Hon. S.
Sheffield Royal Infirmary.—H.P. £80.
Southampton Free Eye Hospital.—H.S. £150.
Stoke-on-Trent County Borough.—Asst. M.O. £500.
Walthamstow, Wanstead, and Leyton Children's and General Hospital.—Jun. Res. H.S. £100.
West Middlesex Hospital, Isleworth.—Asst. Med. Supt. £200.
Winchester, Hampshire County Council.—Asst. M.O.H. £600.

The Chief Inspector of Factories, Home Office, London, S.W., announces the following vacant appointments: Tunbridge Wells, Kent; and Kidsgrove, Staffs.

Owing to the resignation of Sir Hamilton Ballance, as one of the Medical Referees under the Workmen's Compensation Act, 1906, for the Districts of the Aylsham, Downham Market, East Dereham, Fakenham, Holt, King's Lynn, North Walsham, Norwich, Swaffham, Thetford, and Wymondham County Courts, there is a vacancy for a surgeon to fill the post. Applications should reach the Private Secretary Home Office, not later than May 16th.

Births, Marriages, and Deaths.

BIRTHS.

CONLEY.—On April 24th, at Almora, Stockton-road, West Hartlepool, the wife of Dr. Wallace M. Conley, of a son.

GRIFFITH.—On April 19th, at Brunswick-square, Hove, the wife of John R. Griffith, F.R.C.S., of a daughter.

WHITBY.—On April 26th, the wife of L. E. H. Whitby, M.B., B.Ch., of Cavendish-mansions, West Hampstead, of a son.

MARRIAGES.

CHILD—YORKE.—On April 23rd, at St. Peter's, Slinfold, Stanley Child, M.A., M.B., D.P.H., to Phyllis Braybrooke, second daughter of Mr. C. F. Yorke, of Hall Land, Slinfold.

GIBB—MUIR.—On April 21st, at Cadzow Parish Church, James Gibb, M.A., M.B., Ch.B., Sandfield House Downham Market, Norfolk, to Janie Gilmour ("Robin"), younger daughter of Mr. and Mrs. Robert Muir, Portland Park, Hamilton, Lanarkshire.

HARPER—HARGOOD-ASH.—On April 23rd, at St. Peter's, Cranley-gardens, John Maurice Harper, V.D., M.R.C.S., D.P.H., Grosvenor-place, Bath, to Caroline Mary St. Albyn, eldest daughter of the late Mr. W. C. Hargood-Ash, of Portmore, Weymouth, and Mrs. Hargood-Ash, of Ashton, Park-gardens, Bath.

SMITH—THOMS.—On March 24th, 1925, at St. Andrew's Church, Calcutta, James Ironside Smith, I.C.S., Waltair, Vizagapatam District, Madras, to Amy Macdougall Thoms, M.D., M.R.C.P., late of Broughty Ferry, Dundee.

WAYTE—YOUNG.—On April 25th, at the Parish Church, Croydon, John Woollaston Wayte, M.C., M.B., B.S. Lond., to Dorothy Hay Young, youngest daughter of George Hay Young, of "Lonsdale," Campden-road, South Croydon.

DEATHS.

HAMILTON.—On April 26th, at "Accra," St. Mark's-hill, Surbiton, suddenly, of heart failure, Lieut.-Colonel Hamilton, late R.A.M.C. and R.A.F., M.D., M.R.C.S., L.R.C.P.

MCFARLAND.—On April 23rd, at Leinster-gardens, W., Armar John McFarland, B.A., M.D., D.P.H., aged 59.

MATHESON.—On April 19th, suddenly, at Duntulm, North Berwick, Angus Matheson, M.D.

MAY.—On April 20th, at Tremeer, St. Tudy, Cornwall, Surgeon Vice-Admiral Sir Arthur May, K.C.B., K.H.P., D.L., aged 70.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Comments, and Abstracts.

THE AUDIOMETER AND ITS APPLICATION TO MEDICAL RESEARCH.

BY C. M. R. BALBI,

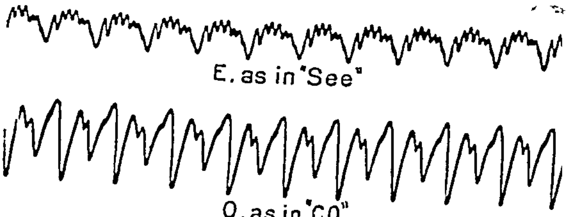
ASSOC. M. INST. E.E.

THE term "audiometer" has been recently introduced, as the result of certain new discoveries in aural physics, to define an instrument for the quantitative measurement of hearing. It is believed that the instrument will be of great assistance to the otologist especially in the case of research work on various forms of deafness, as by its means the effect of drugs may be recorded graphically instead of having to rely on the statements made by patients.

The Theory of Audition.

Audiometric measurement involves certain fundamental laws in physics, which must be understood before the audiometer and its method of operation can be explained.

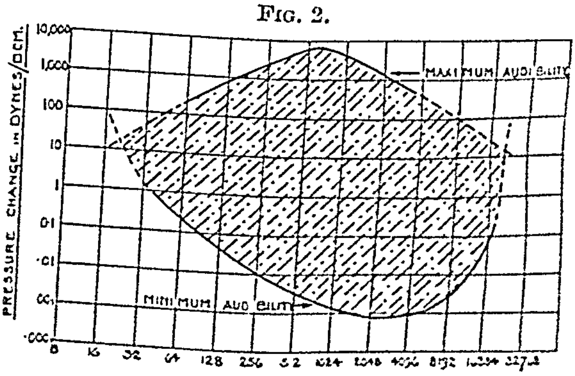
FIG. 1.



Oscillograms of vowel sounds. "O" and "E."

Of first importance are considerations of the character of sound. Sound is said to have (1) frequency; (2) amplitude; and (3) timbre. The term frequency is applied to the fundamental period of any sustained sound. Amplitude may be regarded as the difference in pressure in dynes per sq. cm. between the compressions and rarefactions as they strike tympanum. Timbre refers to the number of overtones or harmonics and their respective amplitudes that are combined in a fundamental. Timbre is of great importance in speech, as by its means characteristic sounds are recognised. The accompanying oscillograms of the sounds "O" and "E" (Fig. 1) illustrate the extent the harmonics preside in the fundamental. In view of the innumerable combination of tones that may be made within the audible range, audiometric measurement would not have been possible if J. B. J. Fourier (a well-known mathematician) had not proved that all periodic wave forms could be analysed into a fundamental and harmonics of a sinusoidal order. This means that for the purpose of audiometric measurement all sounds may be considered as pure tones of different frequencies and amplitudes, so that a complete analysis may be obtained by taking a relation between amplitude and frequency and omitting the question of timbre, and thereby reducing the complication of the problem to a practical level.

FIG. 2.



Frequency in Cycles/Sec.
Audition area for the "standard" ear.

It is known that the human ear is an organ capable of detecting vibrations in the atmosphere, within a frequency spectrum of about 20 to 20,000 cycles per second; outside this region no sound can be heard except that at the lower end of the scale the muscles of the ear produce a sensation which is akin to feeling, but which is quite distinct from hearing. It is also known that intensity plays a part in audibility. The lower limit of audibility is well known to us, but there is also an upper limit which, although not so commonly met with, is quite distinct. It is a point where the intensity is so great as to produce pain.

FIG. 3, A.

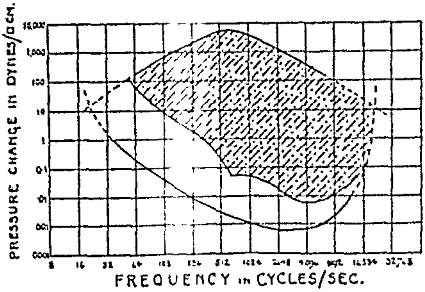
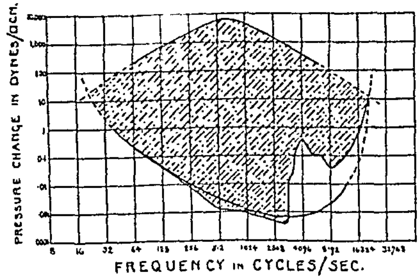
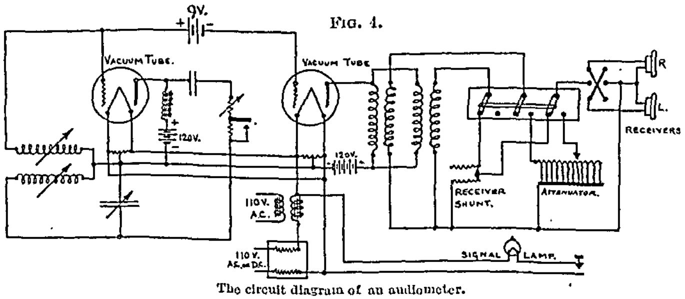


FIG. 3, B.



Certain American observers, amongst others Dr. H. Fletcher and E. C. Wente, have shown that there is a general relation for "*hearing*" between amplitude and frequency for a normal ear. By taking a number of normal cases by *audiometric methods* Dr. R. L. Wegel showed for the first time[1] what has now been termed the audition area for the standard ear, which depicts in graphical form the region of hearing in coördinates of intensity and frequency (see Fig. 2). Any form of deafness must be shown by a diminution of the area set out for the person with normal hearing.

FIG. 4.



The circuit diagram of an audiometer.

The Apparatus Described.

From the considerations just given it can be seen that an audiometer must consist of an instrument that is capable of producing sound waves of variable frequency and amplitude. It had been found that the most suitable instrument for producing these effects is one in which the source is electrical, and which converts its energy into sound waves by means of a special form of receiver. The electrical source itself may be of any form, such as a Vreeland oscillator or special alternator, but as it is most important that it shall be absolutely free from harmonics at all frequencies and loads, it is found desirable to use a valve oscillator. The control of the two variable factors required calls for careful consideration. The control of frequency may be carried out by varying the ratio of a capacity and inductance in a tuned circuit. A set of 16 frequencies covering about eight octaves are found quite sufficient to cover the requirements of any test. The control of intensity may be carried out by varying *the input and measuring its degree*, or the input may be kept constant and the output varied by means of a resistance or attenuator. The calibration of the instrument *somewhat depends on the scales that have been* chosen for frequency and intensity. In the audition chart for the standard ear obtained by Dr. Wegel, the scale of both ordinates is made logarithmic.

FIG. 3, C.

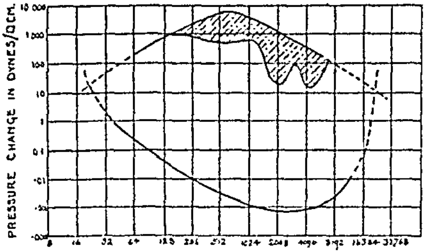


FIG. 3, A, B, C.—Examples of abnormal hearing.

It is easy to see why this should be so in the case of frequency, as our musical scale is logarithmic; it is found from experience that the intensity scale should also be logarithmic, as this gives the most practical shape to the audition area for the purpose of diagnosis. Frequency can be checked by the simple method of testing the intervals that have been adopted against a set of standard tuning-forks, while in the case of intensity we must either take readings and find their logarithms or employ a direct reading method such as the attenuator. In either case the intensity must bear strict relation to the results obtained for the standard *audition area of a normal ear.*

A special form of receiver has to be employed in connexion with audiometric measurements. Its function is to convert the electrical energy produced into sound waves so that the response is proportional to the electrical input at all frequencies; this means that the receiver must be entirely free from resonance. This end may be achieved by special air damping or by the method invented by Mr. J. T. Irwin,[2] in which a special form of electrical damping is employed; this is found to be a much more reliable arrangement.

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[1] The Physical Review, N.S., vol. xix., No. 6, June, 1922. Proceedings of the National Academy of Sciences, vol. viii., No. 7, July, 1922.

Method of Testing.

The audiometer is simple in its operation. A complete test may be carried out in about ten minutes, and only minimum audibility is required. Each ear is tested separately and the test is commenced by the patient holding the special receiver to his ears. Absolute silence must be maintained through the test, and all conversation avoided. The patient is provided with a "push button" for controlling a small electric lamp which he is told to operate directly he fails to hear any sound in the receiver after the test has begun. The oscillating circuit is now set to a particular frequency and the intensity varied slowly; the operator watches the patient's signals to determine the critical point and then takes a reading. This process is repeated about every half octave for eight octaves and the results plotted on a chart. A number of these charts are shown in Fig. 3, A, B, C, taken from actual test figures. The accuracy of the apparatus is sufficient to show up any small change in a patient's hearing, so that quantitative results can be obtained.

These results were obtained by an apparatus made by the Western Electric Co., a circuit diagram of which is shown in Fig. 4.

VOCATIONAL TRAINING OF HIGH-GRADE MENTAL DEFECTIVES.

The problem of the mentally defective child must always present itself under two aspects. On the one hand, there is the case where the structural defect in the central nervous system is so gross that there can be no hope of turning the individual into a competent member of modern society; he can only be protected from the stress of life in some custodial institution for the whole period of his days. On the other hand, there is the higher grade of mental defect where careful guidance and skilled attention during the difficult years of childhood and adolescence may result in the production of a useful member of the community from material which, under less sheltered circumstances, would undoubtedly have turned into the defective or the criminal. This group includes many "borderline" cases of temperamental inadequacy as well as the more typical intellectual inefficiency revealed by "intelligence tests," and it is steadily increasing in size owing to the growth of knowledge as to its diagnosis and treatment. The Besford Court Catholic Mental Welfare Hospital is among the many institutions, originally founded as an asylum for the first class of child, which are now steadily directing their attention towards the selection and salvation of the second class. The seventh annual report of its resident manager is a treatise *in parvo* on mental defect and the name of the institution reveals the nature of the work undertaken. "Mental welfare" is the keynote of the hospital, and only such children are accepted as provide reasonable hope of becoming capable of return to ordinary life between the ages of 16 and 21. No social differentiation is made; cases sent by the mental deficiency and education committees and by the board of guardians are mingled with private cases, and those sent by the Home Office on account of delinquency or inimical home conditions. The spirit is that of a public school, both as regards general education and games. During the last two years an important modification has been put into effect. Whereas originally the hospital was staffed by sisters, whose devotion and zeal produced success where success could hardly have been anticipated by the most confident, yet the importance of masculine influence on growing boys was gradually borne in on those responsible for the institution, so that now it is proposed to divide the home into two departments, a junior for small boys, where the education will be elementary and preponderatingly manual. This will be staffed by the nuns, while the senior department will be under a staff of masters and the training will be a general one culminating in definite vocational classes. The summer camp has been found a most valuable feature of the work; the boys look forward to it with the greatest enthusiasm and return from it in a state of physical fitness which keeps the infirmary almost empty for the rest of the year. It is not a mere holiday camp but a summer school, under canvas, of extraordinary value. The report stresses the mistaken kindness of trying to keep these "misfits" at home in the hope that they will "outgrow" it; when the parents realise that the boy of 15 or 16 is unable to obtain or to keep a job it is too late to do anything for him; had he been placed under suitable care ten years earlier he might have been saved. At Besford Court "a definite stand has been taken against the idea that nothing can be done with the mental defective except feed him and house him." He is being trained in accordance with his specific aptitudes by persons "animated with real enthusiasm and gifted with unending patience, who are prepared to treat each child as does the solver of a problem in chess, remembering that the problem is always being set anew and that the reactions of to-day may restate the problem of yesterday." It is along such lines that the hope of the future for this difficult social and personal problem must indubitably lie.

THE CORONER OF THE KING'S HOUSEHOLD.

A correspondent inquires as to the meaning of this office. Coroners' jurisdiction, as all know, is very ancient. When it was modernised (v. the Coroners Act of 1887), a few characteristic archaisms survived in the form of local franchises. The two chief franchise coroners are (1) the coroner of the Admiralty, who is, in fact, the President of the Admiralty Division of the High Court. He has jurisdiction over deaths at sea and a concurrent jurisdiction with the local county coroner over deaths in big ships on arms of the sea or estuaries; in exercising these concurrent duties the coroner under whose jurisdiction the body first comes holds the inquest. (2) The coroner of the King's household is the other important franchise coroner. He holds inquests on bodies lying in the King's palaces or in the curtilage of any house where the King is temporarily resident. The Lord Steward appoints this officer and the jury consists of officers of the household.

A DIRECTORY OF WELFARE CENTRES.

The Ministry of Health has just reissued the List of Maternity and Child Welfare Centres in England (List 2, M. and C. W. 9, H.M. Stationery Office, pp. 102, price 1s. 6d.), which contains the addresses of all municipal and voluntary centres known to the Ministry in March, 1925. It is divided into three sections, London, county boroughs, and counties, in the last named the centres being classified under the sanitary districts in which they are situated. The centres are specially marked at which antenatal consultations are given. At about 400 centres special arrangements are made for dental treatment. The chief function of these centres is stated to be "to prevent avoidable sickness and injury among women and children, by means of systematic medical and nursing supervision and instruction in hygiene and a healthy mode of living." Patients needing treatment other than for minor ailments, it is added, should, as a rule, be referred to a doctor or a hospital. The actual number of centres included in the list is 2112, 519 being conducted by county councils, 837 by local sanitary authorities, and 756 by voluntary societies.

IS EVERY CASE OF TYPHOID AN ACCIDENT?

This heading, which appeared in the *American City* for March, refers to a recent decision in the American law courts. It appears that the Supreme Court of Illinois has affirmed a judgment of the Appellate Court in favour of the estate of the holder of an accident insurance policy who died of typhoid fever. The said holder died as the result of drinking polluted river water admitted by accident to the drinking water pipes of a railroad shop. Two systems of pipes were connected at only one point, where there was a gate valve which kept the water from either system from flowing into the other. The valve connecting the two systems of water being defective, the drinking water was polluted, and the holder of the accident insurance policy, uninformed of this condition, drank several times from the system of pipes supposed to convey only drinking water. The insurance company contended that his death was not caused by "external, violent, and accidental means" for which indemnity was provided, but the Supreme Court held otherwise. This case, an account of which has been published by the New York State Department of Health in its *Health News*, has, of course, caused a flutter in the insurance world. The *Mutual Underwriter* points out that under these conditions accident insurance companies will have to revise their policies and definitely exclude bacterial diseases from the lists of accidents qualifying for compensation. It is argued that it would be as consistent to sue under an accident policy for pneumonia caused by accidentally catching cold and, indeed, to sue for any other disease not contracted intentionally. According to this line of argument, accident policies will have to become life insurance policies, and this would mean that the premiums for accident policies, so-called, would have to be increased considerably. It will be interesting to see if this judgment in the American courts will affect accident insurance in this country.

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[2] C. M. R. Balbi: The Damping of Diaphragms in Telephone Apparatus. Experimental Wireless, May, 1924, p. 465.

Croonian Lectures

ON THE

RÔLE OF FATS IN VITAL PHENOMENA.

BY J. B. LEATHES, F.R.C.P. LOND., F.R.S.,
PROFESSOR OF PHYSIOLOGY, UNIVERSITY OF SHEFFIELD.

LECTURE III.*

MYELIN FORMS OF LECITHINE.

THERE is a phenomenon that was described three-quarters of a century ago by Virchow, known to all of us at least from description, and generally referred to as the myelin forms which are exhibited by lecithine and mixtures in which lecithine is present. This phenomenon has been but little studied in recent years, and now that physical chemistry is contributing so much to our understanding of unhomogeneous systems and the colloidal state, it is timely that attention should be turned to it again. It is more than likely that the result will be to throw new light on the physiological importance of fats. It is so long since great expectations were aroused by the recognition of the wide distribution of lecithine in the composition of all forms of life, and so long that their realisation has been waited for in vain, that they are seldom even referred to now. But since through the work of McLean, of Parnas, and of Levene, material of greater purity is comparatively easy to obtain, a revival of interest is to be expected.

I have for many years been in the habit of making with students crude preparations of lecithine from yolk of egg or the brain, a streak of which on a glass slide under a drop of water showed the outgrowth of buds that develop into twisting cylindrical forms like the mycelium of a fungus. But lately with purer preparations, and especially with that given me by Dr. Levene, I have observed these outgrowths more systematically, taking photographs of their appearance after different intervals of time, and using various solutions as well as distilled water. And in order to obtain records that can be compared with each other I have especially made use of photographs taken every half-minute over a period of two hours on kinema film ribbons, which when developed can be projected at a convenient rate, about 10–15 a second. A cavity slide is used, and a minute streak of the waxy material is put in the centre of the cavity, so as to show a well-defined edge under a 2-inch objective. The first photograph of this edge is now taken; then two or three drops of water or some solution are put on so as to fill the depression in the slide, a cover-glass put on, and as quickly as possible, generally about 1½ minutes after contact with the liquid, the series of photographs is started. The magnification used on the film is about 40. On projecting the film an idea is obtained of the nature and activity of the process which is set up on contact with the solution that is very much more reliable and distinct than that which is given by direct observations through the microscope extending in each case over hours.

For showing at these lectures a number of such films was prepared; for presentation in print, from some of these films the first photograph and five at intervals later, the same intervals in each, are reproduced in a group of six from each of the selected films. This is a far less satisfactory way of presenting the changes that develop in the time, but still gives some idea of what the film shows. The six photographs in each group are arranged in order, the first three on the left with the first at the top of the column, and the fourth at the top of the right-hand column.

The first photograph in each group shows the edge of the film before it was moistened; the second the same edge 2½ minutes after being moistened, the third 9 minutes, the fourth 17, the fifth 33, and the sixth 57 minutes. No photograph is reproduced in this series from those taken in the second hour, except two in Fig. 2, to which reference will be made below. In some cases the solution applied set up changes which caused the edge of the streak to move right across the field; when that occurred the slide was moved so as to bring it back to a position that would allow it to be observed for longer.

The series of photographs in Fig. 1 is fairly typical of what occurs when distilled water, recently boiled and cooled, is put on. No intentional movement of the slide was necessary. But it looks as if some slight unintentional movement had occurred between the taking of the fourth and the fifth picture, on referring to the film about 20 minutes from the beginning of the experiment. At the time when this film was taken it had not been discovered that some vibration was transmitted to the concrete floor where the microscope and camera were set up when a motor was running in another room a little distance away. The later films were taken only when the motor was not in use. But the error introduced in this case is not material for the purpose, and from experience in many similar experiments with simple water may safely be said to be only slight. The character of the protruding outgrowths, the rate at which they appear, and even allowing for the probability of a slight movement of the slide, the rate at which the edge advances across the field is typical for pure water, when compared with the rates observed with some of the solutions to be referred to later.

Fig. 2 shows the effect of putting on dilute ammonia (N/100) instead of distilled water. The second picture, only 2½ minutes after the ammonia was put on, shows that the budding protrusions had reached a distance 8 mm. (=0·2 mm. unmagnified) from the original position. It had advanced to the edge of the field in 22 minutes, 5 minutes after the fourth picture, in absolute measurement about 0·5 mm. In the course of two hours, during which the slide was moved three times to keep the edge in view, the total advance was about 1·2 mm.; the fifth and sixth pictures in this figure were taken later than in the case of the other figures, 15 minutes apart near the end of the second hour. They show swollen bubble-like formations at this stage and the curious concentric wrinkles in the surface which are very common with some solutions. No photographs are reproduced from the films taken with sodium and potassium hydrates in the same concentration as the ammonia, N/100. They show similar forms, similar markings on the surface of the globular outgrowths, and similar (though not quite so rapid) rates of growth and movement, to those shown by the action of ammonia.

Fig. 3 shows an effect very different from those given by these three bases, when lime-water is used in the same strength. The edge of the preparation remains perfectly sharply defined throughout the experiment, and in fact for as long as it is observed; there is no indication of buds or protrusions. There is a zone at the edge more transparent than the centre, which to the naked eye looks chalky and opaque. But all the free budding outgrowth of myelin forms is stopped.

The natural suggestion occurs here that this difference between the action of calcium hydrate and the hydrates of ammonium, potassium, and sodium would be shown too if baryta were substituted for lime-water. But the film taken with baryta water, N/100, from which the photographs in Fig. 4 are reproduced, shows that baryta does not give the same result; the edge of the lecithine streak advances and is broken up by the formation and detachment of globular masses. It looks, therefore, as if the action of calcium was something peculiar to this ion and not shared in common with other dibasic cations. (Cf. too Fig. 16 below.)

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* Lectures I. and II. appeared in THE LANCET of April 18th and 25th respectively. Lecture IV. will appear in a subsequent issue.

FIG. 1.

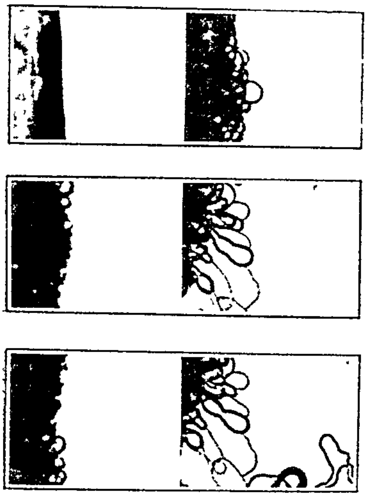


FIG. 2.

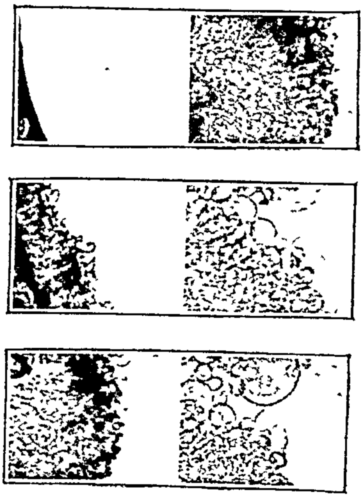
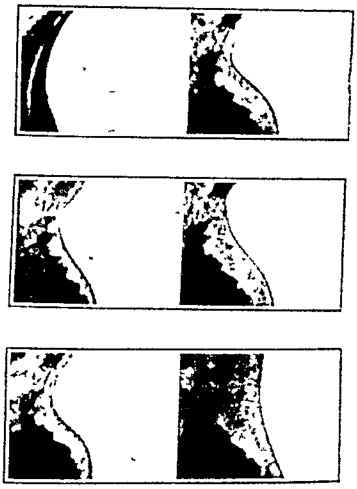


FIG. 3.



Figs. 5, 6 and 7 are from films taken to show the effect of acids, hydrochloric, sulphuric, and acetic, each in N/100 strength. They resemble one another in the freedom and rapidity with which cylindrical outgrowths are formed, though Fig. 5, where the acid was hydrochloric, shows this difference as compared with the action of water alone in much the most marked degree. The region of contact with the acid in this case when the film is projected shows the most astonishing liveliness; the writhing movements of the coiled cylindrical processes can perhaps be imagined even from the isolated photographs. The slide had to be moved twice in the first hour and the advancing edge was even so off the field from the thirty-first to the sixty-fifth photograph, for 17 minutes, that is to say; having travelled at one point 0·5 mm., 20 mm. in the photograph, in 16 minutes. The fact that the action of sulphuric acid, though generally similar, has never been seen to produce such activity as hydrochloric acid suggests that, since the hydrogen ion was present in about the same concentration in these two cases, the effect is in part due to the properties of the anion as well. Acetic acid produces a less vigorous action than the other two acids.

FIG. 4.

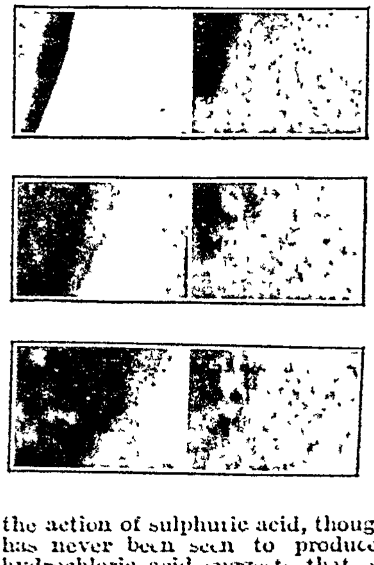


FIG. 5.

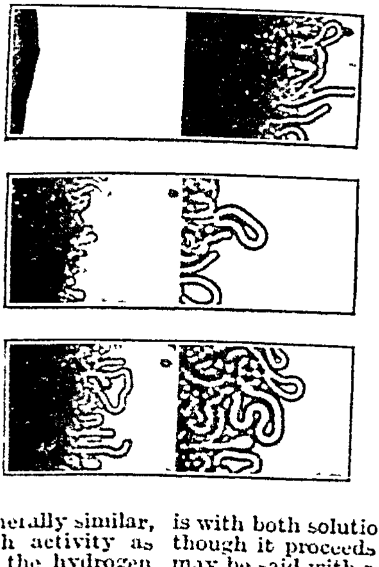
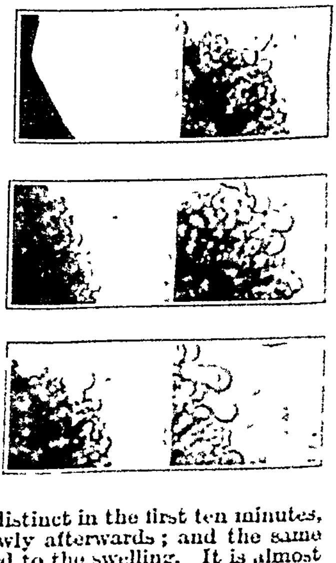


FIG. 6.



The three next figures, Nos. 8, 9, and 10, are from films taken to show the influence of concentrated solutions of the salts ammonium sulphate, sodium chloride, and calcium chloride. The solutions which were saturated in each case were brought to a neutral reaction (pH 6·6 in the case of the first and last, 7·1 in the case of the sodium chloride). This series was suggested by the way in which the lecithine streak in some of the solutions grew and spread out. Without for the moment discussing the nature of the whole phenomenon, it seemed clear that it must involve the incorporation of water in the lecithine; and it was of interest to see how far this was interfered with by a high osmotic pressure in the fluid. It may appear surprising that neither the swelling of the mass nor the outgrowth of buds and protrusions from the surface was entirely stopped either by saturated ammonium sulphate or by saturated sodium chloride solution. The budding from the surface is with both solutions distinct in the first ten minutes, though it proceeds slowly afterwards; and the same may be said with regard to the swelling. It is almost inconceivable that this involves the extraction of water from solutions of such concentration, and yet it is not easy to suppose that in the process of imbibition other molecules are as readily taken up as those of water. Clearly they are not taken up as readily;

the question is whether they are taken up at all, and at any rate at first sight it appears as if they must be; but whether their presence does anything more than embarrass the action of the water, and whether such effect as is produced is produced by the water in spite of its companions it is at present impossible to say.

FIG. 7.

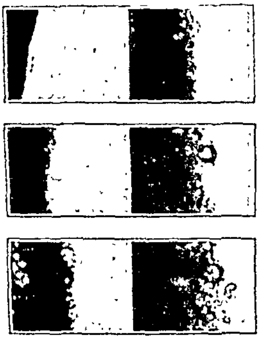


FIG. 8.

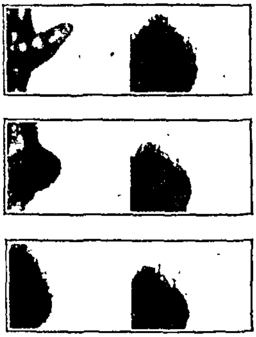
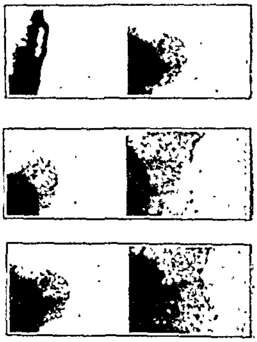


FIG. 9.



But one thing is obvious: in Fig. 10 the action of calcium chloride in high concentration is very different from that of the other salts to which reference has been made. There is no budding of myelin forms: a semi-transparent border appears at the edge of the lecithine after nearly half an hour, and apart from this there is hardly any indication of swelling. It looks as if something was freezing up the action that otherwise so constantly occurs between lecithine and water with which it is in contact, much as is the case with calcium hydrate, as shown in Fig. 3.

Two other groups of photographs are shown in Figs. 11 and 12, which are meant to lead to another line of thought. That lecithine is insoluble in water is proved by the fact that it gives a permanent monomolecular film on water and dilute acids. There must be an interface, therefore, where water and lecithine meet, and substances which concentrate at the water surface may be expected to appear at this interface: it is of interest to see what is the effect on the behaviour of lecithine when this happens.

FIG. 10.

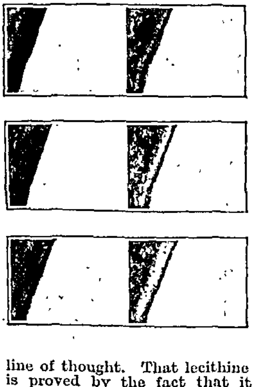


FIG. 11.

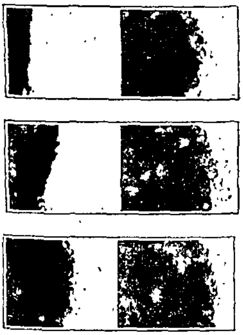
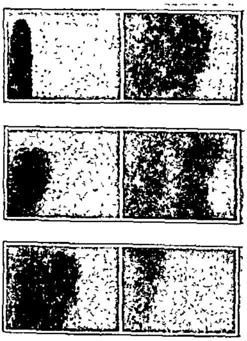
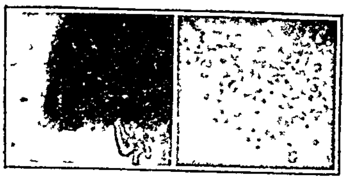


FIG. 12.



In Fig. 11 the fluid put on the slide was egg white filtered and diluted with about four volumes of a sodium phosphate solution so as to contain about $2\frac{1}{2}$ per cent. of albumin and have a neutral reaction (pH 7·2). The fact that the phosphate solution allows the budding process to go on freely and unhindered can be seen from the final result, after a much longer period for action it is true, which is shown in Fig. 17 below. So it is clear that the fact that the budding process is very much restrained by the solution here used must be ascribed to the egg white which it contained and not to the phosphate. In comparison with water alone (Fig. 1) the myelin forms are here very modest though not entirely suppressed. The solid film of egg-albumin which Ramsden has shown to be formed at the surface of its solutions appears to be formed at the surface in contact with the lecithine and to restrain the profuse growth of myelin buds without altogether arresting their formation. in spite of its solidity. It is certainly permeable to water in any case: just as the skin on heated milk formed in the first instance in the same way thickens and becomes conspicuous only when evaporation through it causes it to thicken. The lecithine swells and takes up water through the albumin film very noticeably. Two other films were prepared, photographs from which are not here reproduced, in which solutions containing the same concentration of egg white, but in addition a slight excess of hydrochloric acid in the one case and of ammonium hydrate in the other: these showed that the exuberant action of the acid and the ammonia (Figs. 5 and 2) were still more conspicuously restrained. They serve therefore to confirm the account given here of the action of egg white in repressing but not altogether arresting the phenomenon that we are studying.

FIG. 13.


Water. Ammonia.

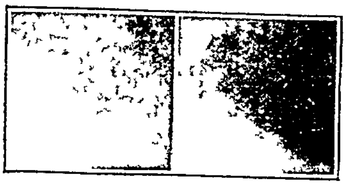

Potash. Soda.

FIG. 14.

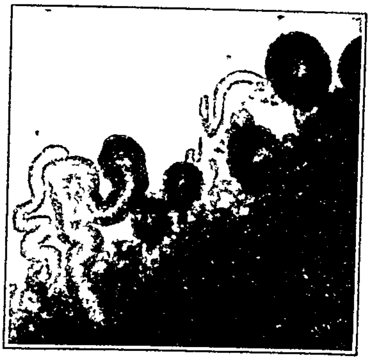
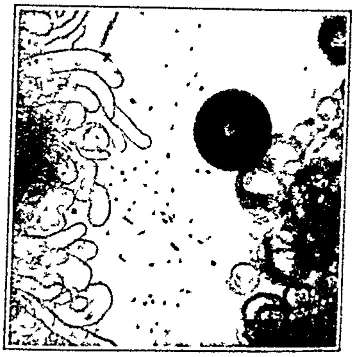
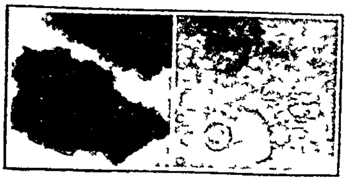


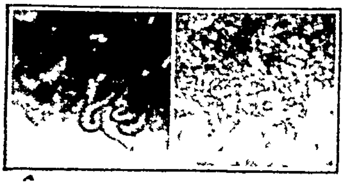
FIG. 15.

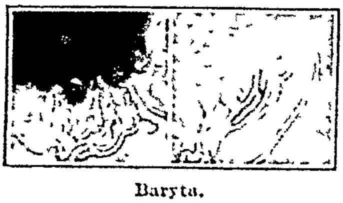


In Fig. 12 are six photographs taken at the same intervals of time as those in the earlier figures though not selected from a continuous series of 210 that go to each of the kinema films. They are, however, comparable with those as they are presented here. The solution here was one of saponin in water (1 in 2000; pH about 4). The effect of the film of saponin concentrated at the interface seems to be very similar to that of egg white.

FIG. 16.


Lime water.


Strontia.


Baryta.

Theory of Formation of Myelin Forms of Lecithine.

The study of myelin forms in lecithine which I have attempted to sketch in with the help of the kinema projector rests upon a hypothesis regarding the way in which they arise, which may or may not be capable of proof but is this. Lecithine is a fat containing two fatty acid radicals instead of three, one of them certainly unsaturated, the other probably saturated; in place of the third there is phosphoric acid condensed by one of its hydroxyl groups with the glycerol and by a second with a basic alcohol choline, the third hydroxyl group being free. And it behaves when spread in a monomolecular film on water as a fat, at any rate as a fat containing unsaturated acid radicals. The artificially saturated derivative, hydrolecithine, behaves as a saturated fat except that the substitution for the third fatty acid chain, with its paraffin properties, of the group containing phosphoric acid and choline, with affinities for water in both the free acid hydroxyl group and the free basic one, causes the two fatty acid chains to be assigned an area in the film nearly as great as that taken up by the three in tripalmitin: the very high pressure necessary in order to reduce this area shows that the group consisting of glyceryl cholyl phosphoric acid is not readily distorted so as to allow close packing of the fatty acid chains.

But though lecithine is a fat and in a film behaves as one, lecithine in bulk behaves very differently from a fat or oil in contact with water. The "surface-tension" of oil against water is such that the number of molecules of either which are allowed by the attractions of other molecules in their neighbourhood to remain in the surface is kept as small as possible, that is to say, the surface area is kept as small as possible. A drop of oil suspended in water remains spherical. With lecithine it is just the other way. The number of molecules of lecithine in contact with water tends to increase and to become as large as possible; that is why the surface is protruded into the water and the myelin forms appear. The attraction excited by water on that par of the molecule of lecithine by which it differ from a simple fat is so great, that the molecul is drawn to and held by the water more strongly than it is by the other lecithine molecules in its

FIG. 17.

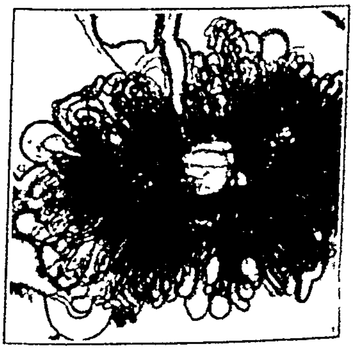
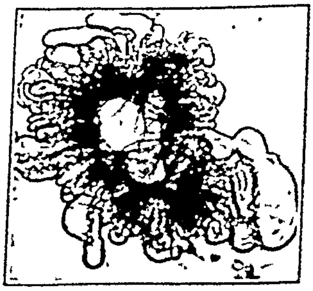


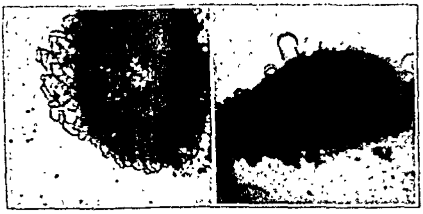
FIG. 18.



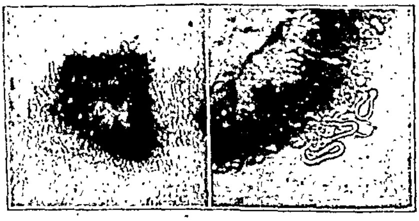
neighbourhood. This attraction prevails over the attractive forces between the paraffin chains, partly because these cannot be packed so close as in a triglyceride. The cohesion between the lecithine molecules is consequently weakened at a water surface, and the surface tends to grow and not to be kept small: if the term surface-tension must be used, the surface-tension is negative.

The conception seems to imply that the attraction of water for the polar group composed of glyceryl cholyl phosphoric acid can make itself felt beyond the first rank of molecules which consists of those actually in contact with the water. According to some the range of molecular attractions is too small for this to be possible. In that case it becomes necessary to *suppose that kinetic activity must* bring molecules temporarily within range of the action of the water in numbers greater than the average number allowed to remain in the surface; and once within the range such molecules are not then able to escape. It should be remembered, too, that in a monomolecular film of lecithine on water the film is expanded and the molecules are not in close contact with each other. Unsaturated fatty acids and oils also give expanded films, but then in them, in the first place, the simple glyceryl radical is not so strongly bound to the water, and in the second place, the cohesive forces between the *fatty acid chains* which can be brought closer together are far stronger than those between these chains in lecithine in which they are kept further apart by the large polar group to which they are attached. But however we are to picture it, the *number of lecithine molecules in contact* with the water tends to grow rapidly and so the myelin forms arise.

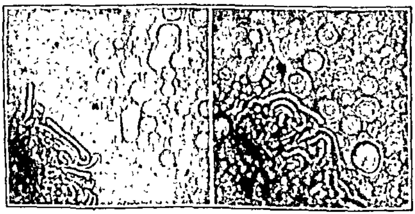
FIG. 19.



No. 1. Serum, 24 hrs. No. 4. Gelatin, 24 hrs.



No. 2. Hæmoglobin, 1 hr. No. 5. Hæmoglobin, 18 hrs.



No. 3. Hæmoglobin, 40 hrs. No. 6. Hæmoglobin, 90 hrs.

FIG. 20.

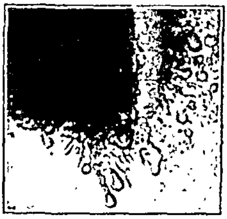


FIG. 21.

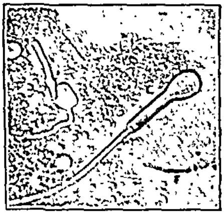
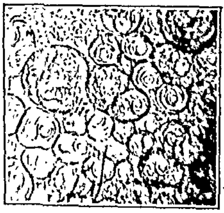


FIG. 22.



It must be pointed out that hydrolecithine shows no such activity at a water surface, not even when *observed on a hot stage heated to 65° C. or more.* So that the unsaturated acid chain in lecithine must be retained in order that the phenomenon may be observed. It is this chain, too, that causes lecithine to give an expanded film, while hydrolecithine gives one that is condensed. And yet the presence of the unsaturated paraffin chain is not by itself sufficient to account for the growth of the surface, since oleic acid and olive oil, which give expanded films, do not give myelin forms.

But while the lecithine *molecules* are pushing out into the water, water molecules are being drawn in among the lecithine. It seems necessary to suppose this because of the growth of the lecithine in volume, because of appearances that suggest alignment of molecules in the lecithine, not only at the external surface but also beneath it within the myelin forms;

and, indeed, the attraction of water and lecithine being reciprocal and the paraffin chains not as close to one another as in a simple glyceride, it seems to follow that water molecules driven by kinetic activity between the lecithine molecules will be detained by their affinity for the group that draws them. Part of the phenomenon then appears to be of the nature of imbibition; imbibition, however, hampered by the long paraffin chains and limited to those regions or strata where the hydrophile groups can congregate.

In two words, therefore, the hypothesis is that myelin forms are due to surface growth and localised imbibition. With this provisional conception of the general nature of the phenomenon, the study outlined above has been directed on three lines: (1) The influence of the presence of various ions in the water; (2) the influence of osmotic pressure; (3) the influence of substances that may be supposed to concentrate at the interface. There remains something to be said under each of these heads and also something on a fourth point, the effect of the presence of cholesterol mixed with or dissolved in the lecithine.

(1) *The Influence of Various Ions.*—In Fig. 13 photographs are shown of the appearance of lecithine 24 hours after being brought into contact with water, with dilute ammonia, and with soda and potash (N/100 in each case). The action of the alkaline fluids differs from that of water in the greater tendency for spherical shapes to arise rather than elongated cylindrical forms; and also in the wrinkled markings parallel to the surface which are seen also in Fig. 2. There and in Fig. 15 these latter were produced in ammonia. In Fig. 13 they show most distinctly in the case of soda, and in Fig. 14 they were also formed under soda. In some cases it looks as if they led to the peeling off of superficial layers or fragments of layers, in others to the formation of spiral clefts.

Such characteristics common to the influence of ammonium, potassium, and sodium hydrates suggests at first that the hydroxyl ion in some way activated and modified the process. But the fact that calcium hydrate has no such effect seems to make a difficulty; while if the action of the alkaline fluids be ascribed to the monobasic cations a difficulty is created by the fact that the dibasic cations—calcium, barium, and strontium—when compared with one another produce different effects. In the left-hand column of Fig. 16 photographs are reproduced of lecithine streaks in weak solutions (N/100) of the hydrates of these three metals. The calcium hydrate was washed in a mortar with three or four changes of water before the solution was prepared. The strontium hydrate was washed by decantation twice; the baryta water prepared from a stronger solution that had been in stock some time. It appears that strontia and baryta water both allow the outgrowth of myelin forms with a freedom which is not allowed in lime water. Repetitions of this experiment with other solutions of baryta and lime have given results all pointing in the same direction, though most of the forms have been generally spherical and not twisting cylinders. The photographs in the right-hand column are set there for a comparison to be made later, when they will be explained. To test the possibility of small quantities of soda or potash present in the alkaline earths as impurities being responsible for the outgrowth in solutions of barium and strontium hydrate, a series of mixtures of lime water and soda (both N/100) in proportion varying from 1 to 9 down to 9 to 1, were prepared and compared with both the soda and the lime water alone. These showed that it was not a case of the presence of small quantities of lime preventing the appearances characteristic for soda, but rather of the presence of soda preventing those characteristic for lime water. The formation of buds, and a mass of spheroidal forms was conspicuous when there was more lime water than soda, even with four times as much, while with equal quantities of the two the appearances shown in Fig. 11 were obtained after [illegible]. Relatively small amounts of soda, possibly the amounts that may be extracted from ordinary glass vessels, may cause myelin forms to appear in lime water or baryta, and possibly strictly pure baryta would not give them. But however that may prove on further investigation, there is no such "precipitation" of lecithine by lime or baryta as to prevent the myelin forms appearing, and a Ringer's solution with calcium gives appearances essentially the same as those given by Ringer's solution prepared without calcium.

The film from which Fig. 10 was prepared shows that the strong solution of calcium chloride obtained from a bottle of pure crystals which had partly deliquesced gives a result similar to that with lime water in appearance. A similar solution of magnesium chloride gives a similar result. But both these solutions diluted to 1/100 of this strength allow a very free outgrowth of myelin forms, mostly but not entirely spherical.

The effect of different reactions on either side of the neutral point was also tested, using ten phosphate mixtures of pH ranging from 6·3 to 7·7. All showed myelin forms freely growing at first and finally a remarkable reticulation of the central parts of the mass. Fig. 17 is a reproduction of a photograph taken after five days where the reaction was that of the blood pH 7·3. Very similar appearances are seen in Fig. 18, another of the same series at pH 7·5, and in others not here reproduced.

(2) The *effect of high osmotic pressure* in the aqueous phase shown in Figs. 8 and 9 was discussed in connexion with them. And this is illustrated, too, by the action of strong solutions of the chlorides of magnesium and calcium just referred to.

(3) The *effect of adsorbed substances*, illustrated by Figs. 11 and 12, is further illustrated by the appearance of lecithine exposed for 24 hours to dilute gelatin solution (Fig. 19, No. 4) where the growth of myelin forms, which had at first been free, was after a short time almost completely arrested. By way of contrast with this, the coiled and twisted cylindrical protrusions formed under glucose solution (0·1 per cent.) in the same time (Fig. 20) make this arrest of growth in gelatin more conspicuous. But in a drop of human blood serum (Fig. 19, No. 1) their formation is fairly free; and with a solution of hæmoglobin obtained by laking washed blood corpuscles surface growth is obtained as luxuriant as with any fluid tested (Fig. 19). So that proteins do not all act as egg-albumin; hæmoglobin, so far from repressing, actually appears to promote the development of myelin forms.

Influence of Cholesterol on Lecithine.

Lastly, with regard to the influence of cholesterol, in all the experiments, excepting those used for kinema films, on the same slide and under the same drop of fluid a streak of lecithine at one side of the cavity and at the other one of lecithine containing a quarter of its weight of cholesterol was set up, and in this way any differences resulting from the presence of the cholesterol could be observed. In Fig. 15 the edges of the two streaks, that on the right containing cholesterol, had approached so that both appeared in the same field; the fluid here was ammonia N/100. The two edges appear, also in the same relative positions to each other, under dilute hæmoglobin solution in the two lowest photographs of Fig. 19 which are from the same preparation, that on the left after 40, that on the right after 90 hours. In Fig. 16 each pair of photographs was taken from the same slide, the right-hand ones from the lecithine containing cholesterol, the left from that containing none. Similarly, Fig. 18 can be compared with Fig. 17. Figs. 21 and 22 are also from lecithine containing cholesterol. It is too early to attempt a definition of the effect of cholesterol. But it does not at any rate hinder either surface growth or swelling. In some cases, as in lime water, it promotes the appearance of myelin forms, and generally it increases the regularity of the shapes.

THE TECHNIQUE OF SUPRAPUBIC PROSTATECTOMY.

FROM THE CLINIC OF PROF. HUGH CABOT,
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The general management of cases of suprapubic prostatectomy has remained almost unchanged in England since the operation was first introduced by Freyer, with the single exception of the modification of the "open operation" described by Sir John Thomson-Walker, and by Judd, of the Mayo Clinic. While the technique devised by Prof. Cabot may not differ greatly from that practised by individual surgeons in England, yet the whole procedure stands as an example of successful scientific surgery, based on sound experimental and pathological work, and establishes the importance of pre-operative drainage of the bladder. It was my good fortune to work for a year with him, and this article describing and explaining his methods may be taken as a token of my very sincere gratitude.

Pre-operative Drainage.

On admission to hospital bladder drainage is instituted in all cases as a routine measure. This is done either by the indwelling catheter or by suprapubic cystotomy, and is irrespective of there being urinary infection or marked residual urine for the following reasons. Any degree of prostatic enlargement sufficient to produce symptoms, will *ipso facto* have produced hypertrophy of the bladder wall, and consequent on this some thickening and congestion of the mucosa. At this early stage the "back pressure" will not be enough to impair the kidney function. But the bladder mucosa will have lowered powers of resistance, and experimental work has shown that though infection cannot be produced in the normal bladder, yet when urinary obstruction or over-distension is present organisms introduced will always cause infection. Further, when the pressure is suddenly released the congestion of the mucosa is increased, and actual petechial hæmorrhages may occur. It is axiomatic that when prostatectomy is performed micro-organisms enter the bladder from the surface of the body, either at the time of operation or shortly afterwards. In a congested bladder we have the "prepared soil" for the production of inflammation. Drainage will relieve the pressure and the congestion, and may further act by producing some degree of active immunity.

When much residual non-infected urine is present the so-called "back pressure" is transmitted to the renal pelvis, producing varying degrees of hydronephrosis. The papillary ducts are unable to empty readily into the renal pelvis, and the "back pressure" is transmitted to the whole of the glomerulo-tubular system. The kidney becomes congested and renal function is impaired. This becomes apparent, first, as a deficiency in the excretory function of the kidney, and later by an actual retention in the blood of urea and other nitrogen waste products.

It is this type of case, with from 6 to 10 oz. of uninfected urine, and clinically a good "operative risk," which is responsible for the high mortality amongst cases in which bladder drainage is not carried out. Some marked disturbance of renal function may result from the sudden lowering of pressure, and congested renal tissue is again a "prepared soil" for circulating organisms, or for those ascending by the lymphatics from the bladder infected at operation.

If the residual urine is infected, but the patient's general condition good and his renal function tests satisfactory, the case is usually a better operative risk than a patient in a similar condition but with uninfected urine, because in the former case he ha acquired an active immunity to such organisn throughout his urinary tract. Some estimate of th patient's general powers of resistance may apparentl be obtained by examination of the cholesterol conter of the blood. This, with the blood-urea estimatio and the phenolsulphonephthalein excretion may forn the renal "tripod of tests"—the term suggested b Mackenzie Wallis for the pancreas.

Renal Function Tests.

In Prof. Cabot's clinic two tests of renal functio are employed, the blood-urea and the phenolsulphone phthalein. These are considered in conjunction wit the general physical condition, the blood pressure and the volume of urine secreted in relation to th fluid intake in determining the patient's fitness fo operation.

The *blood-urea examination* indicates the degree c retention of the nitrogen metabolites; 0·2 per cent is taken as a normal value and 0·4 per cent. as high normal.

The *phenolsulphonephthalein estimation* is a test o the efficiency of renal excretion, and was devised b Rowntree and Gerharty. It is based upon the specifi selective power of the renal epithelium to excret even small doses of the dye, and is capable o accurate quantitative estimation. That it has no come into more general use in this country may b due to a misconception of the technique. The tes is performed as follows: The patient takes fron 200 to 400 c.cm. of water half an hour before the test 1 c.cm. of a solution of phenolsulphonephthalein containing 6 mg. of the dye to the cubic centimetre is injected intravenously and the time noted (A catheter is first placed in the bladder if ar indwelling catheter is not being employed.) The catheter is allowed to drip into a white kidney basin or a cup containing sodium hydroxide solution anc the time of appearance of the dye noted. The urine is then collected in a clean bottle for one hour fron the time of appearance (not the time of injection as is sometimes the case) and a further specimer collected for the second hour. Enough sodium hydroxide is added to each specimen to make it strongly pink without precipitating the phosphates. The amount of dye excreted is estimated by comparison with a known standard in a colorimeter. An appearance time of from three to six minutes is normal and a total function for the two hours of 80 per cent. or over. The total function should be at least 50 per cent. before prostatectomy is performed. The appearance time alone does not give any very reliable information. Sometimes a small quantity of dye comes through fairly early in a damaged kidney. When the appearance time is long, but the total function is good, it means that the catheter is not in the lowest point of the bladder, or that a large post-prostatic pouch is present.

An interesting piece of evidence of the effect of "back pressure" on the renal function is shown by this test. When performed at the time of the first catheterisation of a patient with much residual urine satisfactory figures may be obtained. If it is repeated in three or four days a very marked drop will be noticed, and this has been ascribed to the decompressing of the kidney following the release of back pressure. This allows a great increase in the blood within the organ, and swelling and congestion take place, with a consequent diminution of the renal function. After this initial drop the renal function gradually increases, and unless the kidney has been severely damaged a good percentage will be obtained after a period of drainage. It is common knowledge that prostatectomy performed at the same time as retention is relieved, or in a case with much residual urine, is a highly fatal procedure.

Drainage by the Catheter.

A soft, red rubber catheter is introduced and tied into the bladder, the eye being at the lowest point at which it will just run. It is then connected by fine tubing with a bottle attached to the side of the bed. A rubber catheter is tolerated better than a silk web or gum-elastic one, though a mild urethritis will be produced even by its presence. This may be expected and has no bearing on the course of the case. The catheter is left in until the patient is ready for operation. A few days after its introduction a transient rise of temperature, from 100° to 103°, will occur, and last one or two days. This reaction is an almost constant one, and is due to the production of a mild grade of cystitis. In cases that are drained it is found that the cystitis following prostatectomy is much less marked than in the undrained ones. When the renal function tests are satisfactory such a case is usually ready for operation about one week after the reaction has subsided. About 40 per cent. of patients do not tolerate the indwelling catheter well, the usual reason being that the tip of the catheter is touching and perhaps ulcerating a projecting median lobe. They complain of pain or irritation and the catheter has to be removed. A small number of patients bleed, and here again catheter drainage is unsuitable.

When it is difficult to introduce a rubber catheter, it may be passed threaded over and stretched on a metal stylette, bent to the appropriate curve. If this fails a coudé or bi-coudé catheter should be passed and left in position for 24 hours, when the passage of a soft rubber catheter will probably be easy. If for any reason the indwelling catheter has to be removed, or if the patient is a poor operative risk, either clinically or by renal function tests, and prolonged drainage is likely to be required, the surgeon should proceed at once to drain the bladder by suprapubic cystotomy.

Suprapubic Cystotomy.

This may be performed either for drainage, as the first stage of the two-stage operation, when it is usually done under local anæsthesia, or as the first part of the single-stage prostatectomy after catheter drainage. It requires no detailed description though a few special points will be noted.

The bladder is distended in the usual way, and a mid-line incision made commencing one finger-breadth above the upper border of the symphysis pubis. This lower limit should not be transgressed. When the extraperitoneal, or perivesical fat, has been reached, the surgeon when incising or tearing through it should avoid any downward extension, in order not to open the loose cellular tissue of the retro-pubic space of Retzius. The separation of the bladder from the posterior aspect of the symphysis which is sometimes done may lead to infection of this space, adhesion of the bladder to the symphysis, and even to osteomyelitis of the symphysis. If the space is accidentally opened up it should be drained.

At this stage of the operation the lower limit of the parietal peritoneum will be seen as a fold on the surface of the bladder. It should be pushed upwards and gently stripped from the bladder with the finger. The bladder is next secured with tenaculum forceps or retaining sutures and incised in a vertical direction as high up as possible. A lower incision will tend to sink down behind the symphysis when the bladder contracts. The bladder is explored with the finger and the condition of the prostate investigated. Calculi, if present, are removed. A "de Pezzer" catheter is introduced, the mushroom end being just within the bladder, and the incision is sutured with catgut commencing below. The suture is at first through and through, but on reaching the catheter it is reversed and carried back to the lower end as an infolding suture through the muscle coat only. It is tied at the point of commencement. The abdominal wall is then closed in the usual way.

The patient having been returned to bed, the de Pezzer catheter is connected by tubing to a bottle at the side of the bed, and after the tubes have been filled with water, drainage is maintained by simple syphonage. If done for acute retention the bladder is, of course, not completely emptied, the catheter being clamped, and released at intervals for gradual evacuation. The bladder receives daily irrigation by alternate injection and aspiration of either boric lotion or 1 in 10,000 silver nitrate.

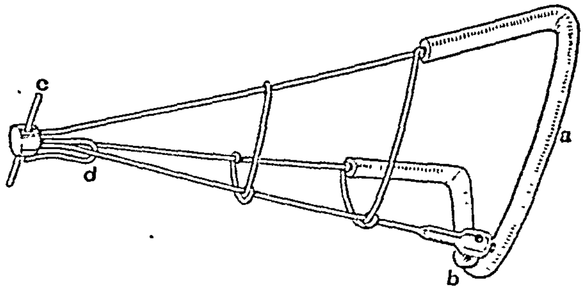
Prostatectomy.

It is, of course, unnecessary to state that the term prostatectomy is a misnomer. The hypertrophic nodules of gland tissue, whether they are believed to be derived from lobules of gland tissue or from embryonic rests, do not involve the whole gland, the remnants of which are compressed and form with the fibrous capsule the "surgical" or practical capsule from within which the adenomata are enucleated. (The enucleation of the adenomatous prostatic enlargement is essentially the same whether performed in one or in two stages.) The right forefinger is introduced through the internal sphincter to dilate it, and the mucosa of the prostatic urethra "cracked" immediately below. This is done along the line of least resistance, usually on the anterior or lateral wall, and the line of cleavage is found. The enucleation is then completed in the usual manner, assisted by a finger of the left hand in the rectum.

Great importance is to be attached to the proper control of hæmorrhage. Bleeding is usually very free from the prostatic cavity, and surgeons are so used to seeing this that some disregard what they would consider as very severe hæmorrhage in any other region. There can be no doubt that the amount of blood lost and the oozing of blood for several days afterwards lowers the patient's resistance greatly. Further, as the prostatic cavity becomes filled with clot, an excellent medium is provided for the growth of micro-organisms, and separation of these infected clots is liable to cause severe secondary hæmorrhage.

The method used for the control of hæmorrhage in the clinic was the hæmostatic bag of Hagner or Pilcher. As soon as all the adenomatous tissue has been enucleated, a special sound (Hagner's) with an olive tip, or any well-curved sound, is introduced through the urethra and the tip made to appear in the incision. The tube connected with the bag is affixed to the olive tip, and the sound withdrawn carrying the bag with it, but leaving in the case of the Hagner bag a cord, and with the Pilcher bag the suprapubic tube, for the purpose of subsequent removal. Traction is made on the tube and the bag drawn down into the prostatic cavity carrying with it the mucosa and any lacerated tissue, thus preventing scar contracture at the internal sphincter and promoting the subsequent epithelialisation of the cavity. Air is then injected with a bladder syringe and the bag distended sufficiently to compress the cavity. The tube is then clamped and subsequently tied, the assistant maintaining steady traction on it throughout the operation. The bladder is inspected and all clot and debris removed. A large rubber drainage-tube is inserted and fixed in position with a stitch, the end being left long so that a tube can be

FIG. 1.

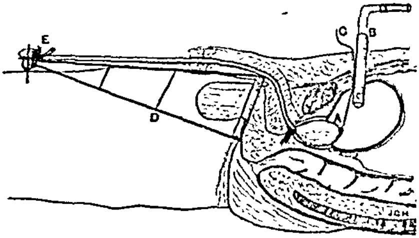


Cabot's Prostatectomy Splint. (*a*) Rubber-covered base. (*b*) Screw to allow of removal and replacement of rubber. (*c*) Cross-bar for attaching the tube. (*d*) Hook to attach loop of tape to anchor splint if necessary.

connected for syphonage. This completes the two-stage operation, while the one-stage operation is completed in the way described under suprapubic cystotomy.

Dressings are applied and the end of the tube held by the assistant is attached to a cage, invented by Cabot, which maintains traction but still allows the patient to move. It consists of a tripod with a V-shaped rubber-covered base which is applied to the perineum. A large pad of cotton-wool is placed within the frame to support the scrotum. (Figs. 1 and 2.) Tension is released from the bag and the cage removed after 18 to 24 hours, though this may be done after 8 to 10 hours if much discomfort is caused. Should bleeding recur the cage can easily be replaced. About 24 hours after operation the air is released and the bag given an hour to collapse and then removed in the following manner: The drainage-tube is first withdrawn, and the portion of the urethral tube projecting beyond the meatus is cleaned with spirit lotion and then lubricated with K.Y. antiseptic jelly. Gentle traction on the suprapubic cord or tube will readily remove the bag. A de Pezzer catheter is introduced into the bladder, and any small clots removed by the injection and aspiration of boric lotion with a syringe. This also shows that the catheter is properly placed in the bladder for syphonage, which is then instituted, and should keep the patient quite dry. The scrotum is supported by a suitable suspensory bandage, as it appears that support tends to minimise the chances of epididymitis. This complication was rare in the clinic, and bilateral vasectomy was not considered necessary.

FIG. 2.



Median sagittal section through the pelvis, illustrating the application of Cabot's prostatectomy splint, or cage. A, Hagner bag in prostatic space. B, Drainage-tube with glass connexion and tube to collecting bottle. C, Cord to bag. D, Cabot's cage in position. E, End of tube doubled back and ligated, attached to cross-bar. The scrotum is supported on a large pad of cotton-wool.

The subsequent care of the patient is as follows: Daily injection and aspiration of the bladder with boric lotion, and the urethral injection of 15 c.cm. of a 1 per cent. solution of mercurochrome. This procedure aims at introducing an antiseptic into the prostatic space where infection is most likely to commence. All patients are put on extra fluids, and on 30 gr. of hexamethylene a day from the time of admission. The de Pezzer is replaced by a smaller catheter after four or five days, and at the end of eight to ten days a temporary clamp is applied to it for a short time and the patient instructed as the bladder fills to try to void per urethram. This is repeated twice and for longer periods on the next day and the patient usually succeeds in passing a small quantity of urine. The following day the catheter can be removed, and the patient instructed to void hourly, the suprapubic dressing being changed as required. In 24 to 48 hours the patient should be dry. If difficulty is experienced the probable cause is that the bladder has been markedly atonic and has not yet recovered its muscle tone. In this case catheter (soft rubber) should be passed and tied in and the wound will close rapidly.

The technique here described has been practise by Prof. Cabot for many years, and the clini mortality is under 4 per cent., although the majority o the operating is done by his assistants. It is th principle underlying the procedure, rather than an special detail, that it is my hope this paper ma elucidate.

THE PROBLEM OF THE PHLYCTENULAR CHILD.

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THERE is a great body of opinion that phlyctenule are due to tubercle. Prof. C. Pirquet, of Vienna, fo instance, says in a private communication:—

> "In phlyctenular conjunctivitis we found regularly a positive *tuberculin test; therefore, already* in the last 15 years we considered it a tuberculous manifestation."

Fuchs states:—

> "In a great number of patients . . . . there are change which are certainly tuberculous, most frequently appearing under the *form of scrofulous lesions* of the glands and bones and not infrequently also of pulmonary tuberculosis. But even in those patients who otherwise show no clinically demonstrable evidence of scrofula or tuberculosis, the examination with tuberculin (by subcutaneous injection or cutaneous inoculation) proves with *rare exceptions* the presence of latent tuberculosis. . . ."

An eminent ophthalmologist notifies every phlyctenular child as a case of tubercle to the authorities. Under the circumstances we thought our phlyctenular cases would offer a rich field *for the* study of tubercle. We have been disappointed. We examined very carefully a series of 50 consecutive, unselected cases, all with phlyctenules, though not all in the same stages of the disease. Twenty-two cases were in the very *earliest stage* with *slight* pyrexia, photophobia, excessive lacrymation, and with noses running, probably from the increased flow of tears down the nasal duct. We find that the temperature, at first 99·5°–100° F., falls to normal in a few days.

Case Records.

Out of a series of 50 consecutive phlyctenular cases 20 were males and 30 females; the average age was 10·43 years; 22 were febrile and 22 afebrile; the *Pirquet reaction was positive in* 18 and negative in six; the chest was apparently normal in 44 cases (doubtful in six); bones were normal in all but one, who was the subject of tuberculous disease; the glands in 28 instances appeared normal and were enlarged *in* 21 (*five of these* being tuberculous); the appetite was good in 30, poor in eight, and fair in three cases; the bowels were regular *in* 40, loose in three, and constipated in three cases. There was a history of previous measles in 31 cases, of whooping-cough in 19, of German measles in three, of scarlet fever in five, of diphtheria in two, of chicken-pox in 12, of pneumonia in three, *of fits* in four, and of rickets in four. Information was obtained regarding 383 living and 129 dead relatives of our 50 children. Out of the 50 families 24 members had died of tuberculosis and nine were suffering from it. The average number living *in each* home was 5·8, and the average number of rooms in each was 3·6. Twelve of the cases were verminous, seven had otitis, 22 enlarged tonsils, 24 coryza. In nine instances other members of the family had phlyctenules.

The following cases seem of sufficient interest to be reported more fully:—

CASE 2.—A boy aged 15. Phlyctenular since the *age of* 10. Had spent various periods away in the country. He had a high-domed palate, huge tonsils, and pus in the right antrum. The tonsils and adenoids being removed and the antrum drained, the phlyctenules disappeared.

CASE 6.—A woman aged 25. Pregnant. Phlyctenules for the first time in her life. Seen on 21/8/24. Fine baby delivered on 22/8/24. When doctor called next day the phlyctenules had disappeared.

CASE 22.—A girl aged 12. Had a bad family history of tubercle. She had signs suggestive of early hilum tuberculosis and was admitted to Victoria Park Hospital for further investigation. Signs were very indefinite, but X ray showed increase of the right hilum shadow spreading into the middle lobe. She had no sputum but fæces were negative for T.B. Pirquet reaction positive. Wassermann reaction negative.

CASE 24.—A girl, aged 10, also had suspicious chest signs, and gave a positive Pirquet reaction. On being admitted to hospital for further investigation, however, no definite signs were found and X ray showed a normal chest. Fæces were negative for T.B. A sister also had phlyctenules.

CASE 25.—A boy, aged 6½, had a tuberculous hip, with abscess in thigh.

CASE 35.—A girl of 7, with right convergent concomitant strabismus and phlyctenules since 1922. A dirty, verminous child with impetigo, one of a family of seven living in two rooms. Big tonsils and enlarged glands in neck. At the base of the left lung the percussion note was impaired and there were coarse râles. Pirquet reaction negative. We suggest fibrosis with bronchiolectasis following whooping-cough.

CASE 39.—An ill-nourished boy, aged 10½, formerly had iritis. Pirquet reaction negative to two repeated tests.

CASE 40.—A girl aged 10. At a first examination a few suspicious chest signs were found, but careful investigations in hospital over a period of a fortnight, including an X ray of the chest and examination of fæces, were negative. Pirquet reaction positive.

CASE 45.—A girl aged 17. The phlyctenules always appeared three days before the menstrual periods.

CASE 50.—Had a rickety chest and enlarged septic tonsils. She had a family history of tuberculosis and a positive Pirquet reaction. She had signs in her chest suggestive of enlarged mediastinal glands and fibrosis, but there was no definite evidence of tuberculosis. Wassermann reaction was negative.

We are indebted to Dr. Scott Pinchin and Dr. F. G. Chandler for permission to publish those cases admitted to Victoria Park Chest Hospital.

Discussion of Results.

We will now proceed to a discussion of our results. We started our investigations under the impression that phlyctenules were a manifestation of tuberculosis, which would probably be fairly easy to demonstrate in our cases. Yet we find that in many phlyctenular children there is no evidence to be found of tubercle, either clinically or in the laboratory. Six children gave with the Pirquet tuberculin skin test a negative result. There was no doubt of the activity of our tuberculin, as in each case other children tested at the same time with the same sample gave positive results. Prof. Pirquet himself, in an examination of 193 apparently normal children between 10 and 14 years of age, found his test showed 81 per cent. were tuberculous. The average age of our own children was 10·13 years, and 18 gave a positive, six a negative, result. Other observers in the past have also obtained negatives with the Pirquet cutaneous tuberculin test.

Table Showing Number of Negative Cases.

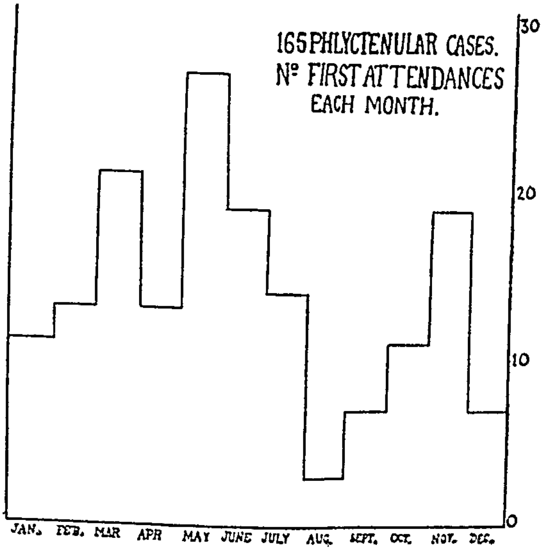
Observer.	Date.	Neg. cases.	Observer.	Date.	Neg. cases.
Ayreux	1910	15	Derby	1905	5
Belensky Raskin	1911	8	Pyfer	—	8
Bruns	1912	10	Rosenbauch	1910	2
Davis and Vaughan	1912	12	Turien	—	4
			Weekers ..	1909	30
			Total		124

Bruns tried Calmette's ophthalmic tuberculin reaction on these 10 cases negative to Pirquet. He had 37 negative results. The tuberculin tests woul therefore seem to show that tuberculosis is absen in many cases of phlyctenular conjunctivitis.

Incidence.

Tuberculosis is a disease without any very marke seasonal incidence. By the courtesy of Mr. W. J Lindsay we are able to publish a graph showing th months of the year in which 165 cases of phlyctenula conjunctivitis first attended at the Royal Eye Hospital (Fig. 1).

FIG. 1.—*Seasonal Incidence Graph.*



We do not wish to lay very great stress on the marked seasonal variations, shown in Fig. 1, as we think they may be due partly to extraneous causes such as the hop-picking season, school holidays, &c. It would, however, be very interesting to compare a number of graphs of the same sort from different hospitals. We should be very grateful if any such were forthcoming.

In regard to age-incidence we found that the oldest patient in our series was 25, and the average age worked out at 10·43 years. This is consistent with the findings of other observers and cases of phlyctenular conjunctivitis in people over 30 are almost unknown. Tuberculosis occurs at all ages, and although certain organs are more liable to be attacked at different times of life, yet no type of tuberculosis is so limited to a particular period of life as would seem to be the case in phlyctenular conjunctivitis.

Tuberculosis in Relation to Phlyctenules.

Out of 512 relatives of our 50 cases a definite history of tubercle was obtained in 33 instances. An exhaustive inquiry into the family history of 50 normal control children gave 23 tuberculous out of 118 relatives. A strong family history of tubercle need not involve phlyctenules. We were privileged to examine the family histories and medical history sheets of the last 37 admissions into the West-square Orphans' Home. Of these 37 children, 20 had lost one or both parents from consumption. Yet since 1921 they have only had one phlyctenular case. This was a child admitted in May, 1921, from very bad surroundings. She came with phlyctenules already; but they cleared up shortly after admission to the institution. Miss Sharman, an alert old lady of 92, who founded the orphanage nearly 60 years ago and still manages it, states she has seen in all her experience very little eye trouble. In institutions where actually tuberculous children are treated, phlyctenules are not very common. At Victoria

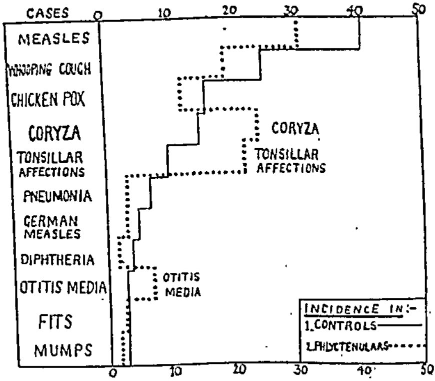
Park Hospital, for instance, among the notes of 210 tuberculous children, in 89 of whom tubercle bacilli were found in the sputum, we find no record of any phlyctenular case.

Phlyctenular conjunctivitis is a disease of the hospital class. Our honorary surgeons at the Royal Eye Hospital do not meet the condition in their private practices. Yet tubercle is no respecter of classes. Surreptitious inspection of a number of medical students showed several with marks of operations for glands in the neck. Phthisis is found in people of every social status. It seems probable, therefore, that while tubercle may be present in many phlyctenular cases, it is not an essential factor in the causation of the disease. It is not disputed that tubercle may be a predisposing cause; but there is little to prove that it is anything more.

Review of Series of 50 Cases.

We proceeded to a review of our series of 50 cases. In each of these we had exhaustive notes of previous illnesses, possible sources of sepsis, &c. But in considering these histories it was important to have a standard of comparison with the normal. We examined, therefore, 50 refraction children in a similar way as controls. The average age of our 50 controls worked out at 9·46 years, while our phlyctenular average was 10·13 years. In doing this we found certain common children's diseases were quite ruled out as possible causes of phlyctenules (see Fig. 2).

FIG. 2.



Comparison between previous illnesses of a group of 50 phlyctenular children and 50 control normal refraction children.

It will be seen that in the cases of measles, whooping-cough, chicken-pox, pneumonia, German measles, fits, and mumps, our control series of children had been quite as much affected as the phlyctenular. More phlyctenular children had suffered from running noses and ears, and many more suffered from, or had had removed, large tonsils and adenoids. At first we thought these increased proportions might be fortuitous, a misleading result due to the examination of insufficient controls. We examined, therefore, 50 more refraction controls for these special points, but were only confirmed in our findings that children with enlarged tonsils and adenoids and those susceptible to coryza were more predisposed than the normal to phlyctenules. We did not think that our cases were sufficient to enable us to decide whether otitis media was really a predisposing cause. In 21 cases in our series enlarged glands were palpated. Only in five cases did we decide these glands were definitely tuberculous. Our method was to palpate enlarged glands on several occasions running. The result was to prove that most of these enlargements were due to transitory causes such as tonsils, pediculi, and impetigo.

In nine of our cases there were other children with phlyctenules in the same family. Special attention was paid to these cases, as conditions were here presumably favourable to the disease. We found that these children were living in conditions of gross overcrowding. The average of these nine cases was 2·01 people to every room in their homes. We did not confine ourselves to taking particulars of bedrooms available, but counted indiscriminately for our average all rooms, sculleries, kitchens, &c., included. The inhabitants of the Waterloo neighbourhood are all rather overcrowded, so we decided to take control statistics. In the families of 50 healthy refraction children there worked out to be 1·416 people per room available. In our series of 50 phlyctenular children there were 1·56 people per room. Where more than one case per family was found the average was 2·01 people for each room available. It seems, then, that the more children are overcrowded the more predisposed they are to phlyctenules. We have already pointed out that phlyctenular keratoconjunctivitis is seldom seen in Harley-street. Our cases were very largely drawn from squalid surroundings. This is shown by the large number of children who were verminous—12 out of 50. Squalid surroundings were found in one or two cases where we made domiciliary visits, which were rather distasteful and consequently soon given up.

Dental sepsis and intestinal toxæmia did not play an important part in our series. Only six had any irregularities of the bowels, and only eight loss of appetite. Malnutrition, we think, acts as a predisposing cause. It is a little difficult to summarise the diet of a large series of children, but in all there would appear to be too great an excess of carbohydrates. The following would be quite typical:—Breakfast: two slices of bread and margarine, some weak tea; dinner: potatoes and gravy (child will not take meat); tea: two slices of bread and margarine with more weak tea. This was the actual diet of a child 4½ years old. Rather an interesting sidelight upon diet was the statement of Case 39, when asked what he would have if he was going to order a luxurious feast. The child was no ascetic and he eagerly replied, "A lot of bread with some real butter, and a very large piece of cheese." Rather more ambitious was a girl of 8 who declared for a steak-and-kidney pudding and a pint of stout.

One child had nystagmus and spasmus nutans; no other children showed abnormalities on a neurological examination and all urines tested were normal.

Our investigations tended to discredit the theory that phlyctenular conjunctivitis is always an outward manifestation of "tuberculi-toxæmia." We now consider that the true ætiology of the disease is unknown. Many investigators have endeavoured to cultivate organisms from excised phlyctenules. Although some of the earlier workers claimed to find staphylococci or Koch-Weeks' bacilli, the modern opinion seems to be that this was accidental contamination and that an early phlyctenule, before becoming secondarily infected, is sterile. Similarly, animal inoculation has been performed by many, but never with striking results. Our own inoculation experiments on rather a small scale were completely negative.

We are thrown back, then, on the theory that phlyctenular conjunctivitis is probably a manifestation of endogenous toxæmia, not necessarily tubercle. Further research is badly needed.

Treatment.

All our cases admitted to hospital cleared up very rapidly. We think surroundings have a great influence. Case 12, aged 11½ years, had suffered from phlyctenules eight years on and off. Away at Swanley Convalescent

Home, May, 1921–August, 1924, the eyes were quite well. Four days after returning home to the New Kent-road the phlyctenules returned. We do not consider tuberculin should be used unless the child gives a positive Pirquet skin reaction. Even then, if three injections of Tuberculin R (Rückstand) bring no improvement, we do not think it is worth continuing. Some cases certainly improve in a striking fashion after tuberculin injections. We are trying the effects of the injection of other protein solutions, but have not got sufficient results yet for publication. Prof. Pirquet, it is interesting to note, says: "As to the tuberculin treatment, we did a lot of it in past years (injections of small doses of old tuberculin), but in the last years we abandoned this treatment nearly entirely, being satisfied with the open air and nutrition treatment." He also points out that in his skin test other proteins often give reactions in tuberculous children, but not so regularly as tuberculin. Locally we are usually satisfied with frequent bathings and the application of 2 per cent. yellow oxide of mercury ointment. In cases of keratitis atropine is often necessary.

Conclusions.

Phlyctenular conjunctivitis is a disease of unknown ætiology but predisposed to by tuberculous infection (not always present), enlarged tonsils and adenoids, frequent colds, overcrowding, dirt, and malnutrition. There seems to be reasonable ground for attributing the cause to endogenous toxæmia (see Cases 2, 6, 45).

THE ALLEVIATION OF CHRONIC PROGRESSIVE DEAFNESS.

A RECORD OF ONE HUNDRED CASES TREATED BY THE ZÜND-BURGUET ELECTROPHONOIDE METHOD.

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IN spite of the advance that aural surgery, in common with other branches of surgery, has made in recent years, otologists have to admit with regret that deafness, when it has become chronic, remains incurable.

Towards the middle of last century Sir William Wilde, the Dublin aurist, now chiefly remembered as the inventor of "Wilde's incision," summed up deafness and its treatment in an aphorism: "There are two kinds of deafness: one is due to wax and is curable, the other is not due to wax and is not curable." This is largely true still, and the reason is not far to seek; it is because we know so little about the ear. In his presidential address to the Otological Section of the Royal Society of Medicine in 1920, Sir Charles Ballance,[1] although he has written the completest work on the surgery of the temporal bone, was constrained to admit: "We are merely on the threshold of our knowledge of the ear": and Dr. J. Kerr Love,[2] the leading authority on deaf-mutism, in his presidential address in 1924 said: "Outside of surgical treatment there has not been great advance in otology. We can hardly do more than we could do 50 years ago in the cure of deafness."

Chronic progressive deafness is of two kinds: first, that caused by a lesion in the sound-perceiving apparatus, called nerve deafness; and secondly, that caused by a lesion in the sound-conducting apparatus which may be either chronic otitis media or otosclerosis. For nerve deafness hitherto there has been no treatment. The late Mr. Hunter Tod, whose position as head of the largest ear clinic in the United Kingdom gave him a unique experience, said: "In a simple progressive nerve deafness nothing very much can be done."[3] Nor is the prospect more pleasing if we turn to the treatment of chronic otitis media. Sir William Milligan, than whom there is no greater authority, in a paper read before the Section of Otology in 1920,[4] asks: "What is the clinical course of chronic adhesive otitis media in so many of our patients?" and answers his own question by stating: "Slow but progressive deafness—perhaps some intermittent improvement—followed by a gradual loss of hearing, until finally a resort has to be made to some form of artificial aid or to lip-reading. I have painted a dismal picture, for in my opinion there has been no substantial progress in the treatment of adhesive catarrh during the past twenty years."

It may be urged that these writers take a gloomy view because they live in a dull, damp, dismal, and depressing climate and their patients, besides, live in gloomy cities where man does his best to prevent the sun shining by deliberately spreading a pall of smoke over the city. This not only lowers the vitality of the nervous system, which is bad for nerve deafness, but also engenders catarrh, which is bad for catarrhal deafness. Let us therefore cross the Atlantic and see what views are held in a sunnier climate concerning the second subdivision, otosclerosis, and also concerning tinnitus, which often causes more distress to the patient than the deafness. In a paper read before the California State Medical Society,[5] Dr. M. W. Frederick said: "I once asked an aural colleague what he did for people who applied to him for relief from noises in the head, and he told me he sent them to his enemies. This crystallises our attitude towards the otosclerotics. . . . There are some amongst us who can boast of hundreds of successful mastoid operations and count the number of favourably treated sinus thrombosis by the score, but not one of us has ever cured, or even relieved, a single case of otosclerosis."

The Zünd-Burguet Electrophonoide Method.

For many years I held the same opinion as these writers and had got tired of having to tell patients, after the classical remedies had failed, that nothing more could be done for them, when, a few years ago, an old patient, who had tried every kind of treatment for his deafness and tinnitus, told me that he had just heard of a new treatment which was being carried out by Dr. Helsmoortel, of Antwerp. On making further inquiries he found that the treatment had originated with a M. Zünd-Burguet, in Paris, and accordingly he went to see him. My patient, who was aged 43, had had otosclerosis for many years; a radical mastoid operation had been performed on the right side some ten years before, and he could only hear with a speaking-tube on each side. What troubled him most, however, was continuous tinnitus. The result of the treatment was at once unsuccessful and successful. The deafness was relieved but slightly and he still had to use his speaking tube, but the noises were so much decreased that life once more became endurable.

So impressed was I by this result and also by those recorded by Dr. Helsmoortel,[6] that I obtained an electrophonoide from M. Zünd-Burguet. This instrument reproduces the sound vibrations of the whole gamut of the human voice and thus gives a physiological stimulus to the ear. It contains three mechanical larynxes in which the vocal chords are replaced by vibrating platinum lamellæ; these are capable of producing in their desired intensity sounds resembling those of the human voice extending over five octaves and passing not merely through tones and semi-tones, but through all the vibrations between 80 and 3500. This is done by sliding platinum contacts along the vibrating lamellæ, the action resembling the movements of the fingers over the strings of a violin. It should be emphasised that the sounds produced are of varying quality and are variable at will. They are transmitted to the ear by modified telephonic receivers. A secondary current can be superimposed on the primary one which makes the sounds, and a vibratory massage of the whole auditory tract is produced. The complex vibrations produced by the electrophonoide act first as sonorous phenomena and secondly as dynamic phenomena, and it is to this double action that we must attribute the results obtained.

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[1] Proceedings, Royal Society of Medicine, November, 1920.

[2] Ibid., January, 1925.

[3] Hunter Tod: Diseases of the Ear, 1911, p. 277.

[4] Proceedings, Royal Society of Medicine, November, 1920.

[5] M. W. Frederick: New York Medical Journal, Jan. 26th, 1918.

[6] J. Helsmoortel: Etude sur la méthode électrophonoïde de Zünd-Burguet, 1913, p. 19.

This instrument is a delicate physiological instrument, but, as all experimenters in physiology know, the personality of the experimenter bulks largely in the result of the experiment. Anyone who thinks that the instrument is an automatic machine and all that is necessary to get the results is to turn certain handles, will only succeed in ruining the instrument without benefiting his patient. There is not space here to discuss the theory on which M. Zünd-Burguet founded his treatment of so-called re-education, but those who wish to understand it should read the two books which he has published on the subject.[7]

Results of Treatment in 100 Cases.

I have had an electrophonoide in use for several years, and I now wish to put on record the result of treating patients suffering from so-called incurable chronic progressive deafness, many of whom also suffered from tinnitus. In order to find out the value of this treatment and also to obviate the fallacy that might exist by using other methods of treatment at the same time, I have taken 100 patients and treated them by the Zünd-Burguet method only. I feel justified, therefore, in stating that any benefit that has accrued to them must be due to that method and to that method alone. Every one of these 100 patients before coming to me had consulted two or more otologists of recognised standing, and many had consulted four or five, not only in London but in the provinces and abroad; in every case the deafness had been pronounced to be impossible of alleviation.

The treatment labours under two disadvantages. First, that it is not possible to tell from any tests made beforehand whether it will be successful or not. *There is a factor in deafness as yet unrecognised, the presence of which—or it may be the absence of which—determines the result.* Secondly, that as the deafness is chronic and progressive, and the improvement obtained after a full course lasts only six to nine months, in order to keep up the improvement another course is required. Sometimes, however, I have known the improvement to continue for one or two years without further treatment. The usual course of treatment consists of 30 sittings, but on account of this unknown factor it is necessary to give a preliminary course of 12 treatments; if considerable improvement occur it is worth while giving a full course; if there be no improvement it is not. The improvement must be considered in relation to normal hearing and not merely in relation to the amount of hearing the patient had previously; for instance, if a patient hear the ordinary voice at 6 inches or 1 foot and that distance be increased to 1 foot or 2 feet, even though the improvement be 100 per cent. or more, it still leaves the patient, for all useful purposes, as deaf as before; the improvement is in reality negligible, and it is useless to go on.

The tuning-fork tests afford no clue beforehand as to the possibility of alleviation. The watch and acoumeter I consider useless tests for any practical purpose in these cases and never employ them. The only useful tests are the tests made by the voice, as that is what these deaf people want to be able to hear. It is necessary, therefore, to compare the tests made by voice and whisper before and after the 12 treatments. We shall discuss the whisper first as the less important; indeed, I have been struck by the want of correlation between the improvement in the ability to hear the voice and the improvement in the ability to hear a whisper. The whisper used is one of constant strength; this is attained by taking a breath and forcing it out again, using only the residual air for the whisper. It may seem a work of supererogation to take a breath each time before forcing it out, but it is only by so doing that the whisper can be kept of constant strength, as otherwise one may begin to whisper sometimes with the lungs full, sometimes with them half full, and at other times with them empty, which would give a different result each time. I may mention an anecdote apropos of this. A deaf physician, a friend of mine, went with a deaf patient who was about to try a new treatment. The patient was tested by the otologist with a whisper so low that my friend could not hear it. After undergoing the treatment the patient was tested with a whisper so very much louder that my friend felt constrained to say: "It is indeed a wonderful treatment, Sir, because not only has it made my patient hear better, but it has made *me* hear better."

There remains, then, the voice, the only test that is of importance for these deaf people, as the whole aim and object of the treatment is to enable them to hear the voice when used in ordinary conversation. Some of my colleagues, albeit in quite a friendly way, have hinted that my results are too good to be true, and that, as in the story told above, I have used a louder voice when testing after the treatment than before. I shall therefore, at the risk of obtruding some personal details, say something on this point.

I have been compelled to study the subject of voice production more than most people, because until the age of 25 I had both a lisp and a stammer, and was besides unable to pronounce the letters "l" and "r," substituting "n" for both of them. I studied voice production and "visible speech" with a Mr. Jones, who was sent from America by Alexander Melville Bell and his son Graham Bell to start the first school of "visible speech" in Scotland. Further, I studied voice production and singing at Naples under the late Signor Scafati, the last of the old Italian *bel canto* school. I mention these facts to show that I have studied the subject and have, I believe, sufficient command of my voice and a sufficiently good ear to be able to keep the ordinary or conversational tone for testing.[8] For purposes of comparison, I may say that my conversational voice is heard by a normal hearing person at 80 ft., and my whisper at 20 ft.

The distance at which the voice and the whisper are heard by each ear is recorded before and after treatment. The measurements are all made by tape-measure and not by guess-work. The 100 patients come under three headings—namely: (1) 34 suffering from nerve deafness, (2) 33 suffering from chronic otitis media, and (3) 33 suffering from otosclerosis. No patients suffering from active suppuration in the middle ear have been included, nor cases of mixed deafness, nor cases of deafness due to syphilis, war injuries, or war neuroses. It will be observed that in some cases the tinnitus has ceased completely after treatment, although the deafness may not have been greatly alleviated; in others the tinnitus has not ceased, although the deafness has been alleviated.

In the accompanying tables the record of the left ear is given on the left of the column and that of the right ear on the right. A record is given first of the distance at which the ordinary conversational voice and whisper (W.) are heard by the left and right ear before treatment (B.T.) and then after treatment (A.T.) The second course of treatment has always been given six months after the first course unless there be a note to the contrary. The result after the second course is marked "2nd" and after the third course "3rd." In order to keep the cases in extended tabular form, so that they can be compared before and after treatment, I have had to save space by omitting histories of the cases, the records of the tests carried out after the 12 preliminary treatments, and also the results of the tests before beginning the second course. In a few cases the improvement had continued in the interval between the courses, and the hearing was better before beginning the second course than at the end of the first course; but, as a rule, the hearing was not so good by a foot or so before beginning the second course.

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[7] A. Zünd-Burguet: Principes d'Anacousie (Rééducation Auditive), 1913; Conduction Sonore et Audition, 1915. London: H. J. Glaisher, 57, Wigmore-street, W. Paris: From the Author, 25, Rue du Général Foy.

[8] G. C. Cathcart: Stammering and Voice Production, System of Treatment (Latham and English), 1912.

Nerve Deafness.

Of the 34 patients comprised in this group 28 improved, including 15 males, whose ages ranged from 15 to 65, and 13 females, whose ages ranged from 9 to 77; six patients, including four males, aged 51, 51, 52, and 60, and two females, aged 51 and 52, did not improve. No. 2 had been advised to go to a school for the deaf and dumb, but after treatment was able to go to an ordinary school. No. 9, between the first and second courses, had a severe attack of influenza and acute otitis media of the right ear, for which paracentesis had to be done, but in spite of that the hearing has improved. No. 20 was tested after an interval of 18 months and was found to have improved considerably, while the tinnitus had not returned.

1. R. S., aged 9, F.

	Left ear.	Right ear.
B.T.	16 ft., W. 6 in.	2 ft., W. nil.
A.T.	30 ft., W. 6 in.	30 ft., W. 6 in.
2nd	30 ft., W. 8 ft.	30 ft., W. 1 ft.

2. D. R., aged 12, F.

B.T.	2 ft., W. nil	2 ft., W. nil.
A.T.	15 ft., W. nil	15 ft., W. nil.
2nd	17 ft., W. at ear	17 ft., W. at ear.

3. A. I., aged 16, M.

B.T.	16 ft., W. 1 ft.	4 ft., W. at ear.
A.T.	40 ft., W. 3 ft.	40 ft., W. 2 ft.
2nd	40 ft., W. 3 ft.	40 ft., W. 2 ft.

4. G. L., aged 20, M.

B.T.	1 ft., W. nil	1 ft., W. 1 in.
A.T.	17 ft., W. 1 in.	20 ft., W. 1 in.

5. B. F., aged 21, M.

B.T.	6 ft., W. 1 in.	2 ft., W. 1 in.
A.T.	13 ft., W. 1 in.	5 ft., W. 1 in.
2nd	15 ft., W. 2 in.	8 ft., W. 1 in.
3rd course after 18 mos.	18 ft., W. 2 in.	10 ft., W. 1 in.

6. W. L., aged 22, M.

B.T.	Shout at ear	1 ft., W. nil.
A.T.	6 in., W. nil	8 ft., W. 6 in.
2nd after 2 yrs.	2 ft., W. nil	26 ft., W. 6 in.

7. G. F. C., aged 23, F.

B.T.	13 ft., W. 1 ft.	15 ft., W. 2 ft.
A.T.	40 ft., W. 3 ft.	40 ft., W. 6 ft.
	Tinnitus ceased.	

8. Mrs. R. D., aged 27.

B.T.	2 ft., W. nil	6 ft., W. 2 in.
A.T.	10 ft., W. at ear	25 ft., W. 6 in.
2nd	12 ft., W. 1 in.	30 ft., W. 9 in.

9. E. F., aged 31, M.

B.T.	10 ft., W. 2 ft.	11 ft., W. 6 in.
A.T.	35 ft., W. 3 ft.	33 ft., W. 1 ft.
2nd	38 ft., W. 1 ft.	38 ft., W. 2 ft.

10. N. K., aged 35, F.

B.T.	4 ft., W. at ear	10 ft., W. at ear.
A.T.	30 ft., W. 3 ft.	30 ft., W. 3 ft.
2nd	35 ft., W. 1 ft.	35 ft., W. 1 ft.

Tested after eight months, hearing had remained the same.

11. C. O., aged 38, M.

B.T.	15 ft., W. 2 in.	15 ft., W. 2 in.
A.T.	30 ft., W. 6 in.	30 ft., W. 6 in.
	Tinnitus ceased.	
Tested after four years. Tinnitus has not returned and hearing has increased to—	35 ft., W. 2 ft.	35 ft., W. 1 ft.

12. Mrs. F., aged 39.

B.T.	17 ft., W. nil	17 ft., W. nil.
A.T.	40 ft., W. 3 ft.	40 ft., W. 3 ft.
	Tinnitus ceased.	

13. T. J., aged 42, M.

B.T.	10 ft., W. 1 ft.	10 ft., W. 1 ft.
A.T.	35 ft., W. 2 ft.	35 ft., W. 2 ft.

14. Mrs. H. C., aged 44.

	Left ear.	Right ear.
B.T.	16 ft., W. 6 in.	16 ft., W. 6 in.
A.T.	40 ft., W. 4 ft.	40 ft., W. 4 ft.

15. Miss C. M., aged 45.

B.T.	15 ft., W. 2 ft.	2 ft., W. nil.
A.T.	20 ft., W. 3 ft.	20 ft., W. 2 ft.
2nd	25 ft., W. 3 ft.	25 ft., W. 2 ft.

16. G. H., aged 49, M.

B.T.	3 ft., W. nil	2 ft., W. nil.
A.T.	20 ft., W. nil	8 ft., W. nil.
	Tinnitus much less.	
2nd	25 ft., W. 3 ft.	25 ft., W. 2 ft.

17. R. D. D., aged 49, M.

B.T.	16 ft., W. nil.	2 ft., W. nil.
A.T.	30 ft., W. 2 in.	17 ft., W. nil.

18. C. A., aged 49, M.

B.T.	2 ft., W. nil.	6 ft., W. 6 in.
A.T.	4 ft., W. nil.	16 ft., W. 1 ft.
	Tinnitus ceased.	
2nd	6 ft. 6 in.	18 ft., W. 2 ft.

19. Mrs. B., aged 52.

B.T.	16 ft., W. 1 ft.	16 ft., W. 2 ft.
A.T.	35 ft., W. 2 ft.	35 ft., W. 4 ft.

20. Miss M. B., aged 52.

B.T.	16 ft., W. 9 in.	10 ft., W. 9 in.
A.T.	35 ft., W. 12 in.	35 ft., W. 12 in.
	Tinnitus ceased.	
Tested after 18 months. Tinnitus had not returned and hearing had improved to—	45 ft., W. 18 in.	45 ft., W. 18 in.

21. Miss A. K., aged 50.

B.T.	14 ft., W. nil	16 ft., W. nil.
A.T.	30 ft., W. 1 ft.	35 ft., W. 2 ft.
	Tinnitus ceased.	

22. W. H., aged 56, M.

B.T.	8 ft., W. nil	Shout at ear.
A.T.	18 ft., W. 1 in.	5 ft., W. nil.

23. C. V. L., aged 50, M.

B.T.	6 in., W. nil	16 ft., W. nil.
A.T.	8 ft., W. nil	40 ft., W. nil.

24. C. L. A., aged 60, M.

B.T.	6 in., W. nil	4 ft., W. nil.
A.T.	8 ft., W. nil	20 ft., W. 2 in.
	Tinnitus ceased.	
2nd course after 2 yrs.	9 ft., W. nil	30 ft., W. 3 in.

25. B. S., aged 61, M.

B.T.	18 ft., W. 6 in.	3 ft., W. nil.
A.T.	28 ft., W. 10 in.	12 ft., W. 1 in.
2nd after 1 yr.	30 ft., W. 18 in.	30 ft., W. 8 in.

26. Mrs. W. W., aged 63.

B.T.	12 ft., W. nil	16 ft., W. nil.
A.T.	30 ft., W. 2 ft.	30 ft., W. 2 ft.
	Tinnitus ceased.	
2nd	40 ft., W. 1 ft.	40 ft., W. 3 ft.

27. E. N., aged 65, M.

B.T.	7 ft., W. nil	7 ft., W. nil.
A.T.	30 ft., W. nil	30 ft., W. nil.
2nd	30 ft., W. nil	30 ft., W. nil.
3rd	30 ft., W. nil	30 ft., W. nil.

28. Miss A. L., aged 77.

B.T.	2 ft., W. nil	3 ft., W. nil.
A.T.	20 ft., W. 3 in.	20 ft., W. 3 in.
Tested after 1 yr.	20 ft., W. 3 in.	20 ft., W. 3 in.

Nos. 29 to 34 did not improve after the preliminary 12 treatments.

Chronic Otitis Media.

In this group of 33 patients, 22 improved, comprising 10 males, whose ages ranged from 7 to 63, and 12 females, whose ages ranged from 22 to 60; 11, consisting of 5 males of ages 29 to 58, and 6 females aged from 25 to 60, did not improve. Case No. 35 had been advised to go to a school for the deaf and dumb, but after treatment he was able to go to an ordinary public school. Cases Nos. 39, 47, and 55 were sent to me by Sir Charles Ballance; some years before he had performed a radical mastoid operation, with grafting, on the right ear in No. 39 and on the left ear in Nos. 47 and 55. It will be observed that Nos. 39 and 47 could hear better in the operated ear, after treatment, than in the other ear.

35. G. C., aged 7, M.

	Left ear.	Right ear.
B.T.	3 ft., W. nil	13 ft., W. nil.
A.T.	18 ft., W. 1 in.	18 ft., W. 1 in.
2nd	28 ft., W. 1 in.	30 ft., W. 1 in.
3rd	30 ft., W. 6 in.	30 ft., W. 6 in.

36. J. D., aged 8, M.

B.T.	6 ft., W. nil.	2 ft., W. nil.
A.T.	23 ft., W. 4 in.	26 ft., W. 2 in.
2nd	25 ft., W. 6 in.	23 ft., W. 4 in.

37. D. B., aged 10, M.

B.T.	10 ft., W. 1 ft.	1 ft., W. nil.
A.T.	23 ft., W. 2 ft.	23 ft., W. 1 in.
	Tinnitus ceased.	
2nd after 15 mos.	40 ft., W. 2 ft.	40 ft., W. 1 in.

38. A. D., aged 11, M.

B.T.	8 ft., W. nil	3 ft., W. nil.
A.T.	20 ft., W. 9 in.	10 ft., W. 3 in.
2nd	20 ft., W. 1 ft.	12 ft., W. 6 in.
3rd after 3 yrs.	20 ft., W. 1 ft.	12 ft., W. 6 in.

39. H. P., aged 20, M.

B.T.	1 ft., W. nil	1 ft., W. nil.
A.T.	6 ft., W. nil	10 ft., W. nil.
	Tinnitus ceased.	
2nd	8 ft., W. nil	10 ft., W. nil.
3rd after 3 yrs.	10 ft., W. 1 in.	18 ft., W. 2 in.

40. Miss N. W., aged 22.

B.T.	3 ft., W. 3 in.	2 ft., W. 2 in.
A.T.	18 ft., W. 9 in.	10 ft., W. 6 in.
	Tinnitus ceased.	
2nd	35 ft., W. 18 in.	35 ft., W. 6 in.

41. Miss B. M., aged 26.

B.T.	1 ft., W. nil	6 ft., W. nil.
A.T.	15 ft., W. 1 ft.	30 ft., W. 1 ft.
	Tinnitus ceased.	
2nd after 1 yr.	20 ft., W. 1 ft.	35 ft., W. 1 ft.

42. Miss M. C., aged 22.

B.T.	6 ft., W. nil	14 ft., W. 2 in.
A.T.	14 ft., W. 6 in.	25 ft., W. 9 in.
	Tinnitus not ceased.	

43. Miss M. L., aged 28.

B.T.	13 ft., W. nil	At ear, W. nil.
A.T.	23 ft., W. 2 ft.	2 ft., W. nil.
	Tinnitus ceased.	
2nd	35 ft., W. 3 ft.	3 ft., W. 1 in.

44. Miss B. L., aged 28.

B.T.	2 ft., W. nil	8 ft., W. 3 in.
A.T.	10 ft., W. 2 in.	15 ft., W. 6 in.
	Tinnitus ceased.	
2nd	12 ft., W. 3 in.	16 ft., W. 9 in.

45. W. H., aged 29, M.

B.T.	14 ft., W. 6 in.	2 ft., W. nil.
A.T.	30 ft., W. 2 ft.	20 ft., W. 6 in.
	Tinnitus ceased.	
2nd	35 ft., W. 2 ft.	20 ft., W. 12 in.

46. J. M., aged 37, M.

B.T.	6 ft., W. nil	At ear, W. nil.
A.T.	20 ft., W. 6 in.	2 ft., W. nil.
	Tinnitus not ceased.	
2nd	25 ft., W. 6 in.	2 ft., W. nil.
3rd	30 ft., W. 6 in.	2 ft., W. nil.

47. C. T. C., aged 38, M.

B.T.	2 ft., W. nil.	1 ft., W. nil.
A.T.	10 ft., W. 1 in.	3 ft., W. nil.
	Tinnitus not ceased.	
2nd	20 ft., W. 9 in.	8 ft., W. 1 in.

48. F. G., aged 38, M.

B.T.	3 ft., W. nil	1 ft., W. nil.
A.T.	16 ft., W. nil	9 ft., W. nil.
2nd	18 ft., W. 6 in.	10 ft., W. 3 in.

49. I. H. H., aged 40, M.

B.T.	9 in., W. nil	8 ft., W. 1 in.
A.T.	2 ft., W. nil.	16 ft., W. 6 in.
2nd	2 ft., W. nil	18 ft., W. 6 in.
Tested after 2 years—	2 ft., W. nil	16 ft., W. 6 in.

50. Mrs. F. J., aged 42.

B.T.	2 ft., W. 1 in.	3 ft., W. nil.
A.T.	6 ft., W. 1 in.	13 ft., W. 1 in.
	Tinnitus not ceased.	
2nd	8 ft., W. 1 in.	19 ft., W. 1 in.
3rd	9 ft., W. 1 in.	20 ft., W. 3 in.

51. Mrs. H. R., aged 43.

B.T.	3 ft., W. 1 in.	13 ft., W. 18 in.
A.T.	30 ft., W. 1 ft.	40 ft., W. 3 ft.
	Tinnitus ceased.	
2nd	40 ft., W. 1 ft.	40 ft., W. 3 ft.

52. Miss V. D. F., aged 44.

B.T.	4 ft., W. nil	2 ft., W. nil.
A.T.	26 ft., W. 9 in.	16 ft., W. 6 in.
	Tinnitus not ceased.	

53. Mrs. A. H., aged 40.

	Left ear.	Right ear.
B.T.	2 ft., W. nil	6 ft., W. nil.
A.T.	7 ft., W. nil	14 ft., W. nil.
	Tinnitus ceased.	
2nd	9 ft., W. nil	20 ft., W. nil.
3rd	10 ft., W. nil.	22 ft., W. nil.

54. Mrs. A. B., aged 53.

B.T.	4 ft., W. nil	1 ft., W. nil.
A.T.	8 ft., W. nil	4 ft., W. nil.
2nd	9 ft., W. 1 in.	4 ft., W. nil.
3rd	10 ft., W. 1 in.	8 ft., W. 1 in.

55. Mrs. B. W., aged 60.

B.T.	1 ft., W. nil.	2 ft., W. nil.
A.T.	10 ft., W. 6 in.	20 ft., W. 2 ft.

56. R. B., aged 63, M.

B.T.	1 ft., W. nil	8 ft., W. nil.
A.T.	2 ft., W. nil	20 ft., W. 2 in.
2nd	2 ft., W. nil	25 ft., W. 3 in.

Nos. 57 to 67 did not improve after the preliminary treatment.

Otosclerosis.

Of the 33 patients in this group, 18 improved; they comprised 4 males, aged 20, 35, 40, and 55, and 14 females, whose ages ranged from 27 to 62. Fifteen did not improve; they comprised 7 males, aged from 25 to 55, and 8 females, aged from 22 to 57. Cases Nos. 69, 72, 76, 80, and 81 had become worse after child-birth and had been told that they would become worse still if they had any more children; but Nos. 69, 72, and 76 have each had a child after the first course, and have not become worse. No. 68, although told that she would become worse if she had a child, had one after the first course and has not become worse. The importance of this may be realised when we find that Sir William Milligan,[*] in discussing otosclerosis and pregnancy, has gone so far as to raise the following point: "If in a case of advanced deafness where previous pregnancies have invariably increased the existing deafness, and where the patient is again pregnant, whether it is advisable or justifiable to induce premature labour." No. 71, tested after eight months, during which time she has been ill and confined to bed for two months, had only lost 1 ft. of the hearing in the left ear for the voice and 1 ft. for the whisper in the right, but the tinnitus had not returned. No. 83 returned for a second course, not because of deafness, but because the tinnitus, which had been relieved for three years, was beginning to trouble him again.

68. Mrs. W. B., aged 27.

	Left ear.	Right ear.
B.T.	2 ft., W. nil	16 ft., W. 6 in.
A.T.	8 ft., W. nil	23 ft., W. 12 in.
	Tinnitus ceased.	
2nd after 1 yr.	10 ft., W. 1 in.	30 ft., W. 2 ft.

69. Mrs. A., aged 30.

B.T.	3 ft., W. 3 in.	2 ft., W. 2 in.
A.T.	20 ft., W. 1 ft.	20 ft., W. 1 ft.
	Tinnitus ceased.	
2nd	20 ft., W. 1 ft.	20 ft., W. 1 ft.
3rd after 18 mos.	20 ft., W. 1 ft.	20 ft., W. 1 ft.

70. Miss J. D., aged 31.

B.T.	1 ft., W. nil	7 ft., W. nil.
A.T.	5 ft., W. 1 in.	15 ft., W. 6 in.
	Tinnitus not ceased.	
2nd	5 ft., W. 1 in.	18 ft., W. 6 in.

71. Miss H. S., aged 31.

B.T.	1 in., W. nil	2 ft., W. nil.
A.T.	2 ft., W. nil	30 ft., W. 1 ft.
2nd after 1 yr.	3 ft., W. nil	10 ft., W. 1 ft.
Tested after 1 yr.	2 ft., W. nil	40 ft., W. at ear.

72. Mrs. C. J., aged 33.

B.T.	1 ft., W. 1 in.	7 ft., W. 7 in.
A.T.	4 ft., W. 3 in.	16 ft., W. 9 in.
	Tinnitus not ceased.	
2nd	6 ft., W. 5 in.	18 ft., W. 12 in.
3rd	6 ft., W. 6 in.	18 ft., W. 12 in.

73. Miss E. G., aged 34.

B.T.	1 ft., W. nil	2 ft., W. nil.
A.T.	8 ft., W. nil	18 ft., W. 2 in.
	Tinnitus ceased.	
2nd	12 ft., W. 4 in.	20 ft., W. 6 in.
3rd	14 ft., W. 4 in.	23 ft., W. 9 in.

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[*] Journal of Laryngology, Rhinology, and Otology, June, 1906.

	Left ear.	Right ear.
74. Mrs. P., aged 35.		
B.T.	6 ft., W. nil	16 ft., W. 6 in.
A.T.	17 ft., W. 3 in.	30 ft., W. 12 in.
75. G. W., aged 36, M.		
B.T.	1 ft., W. nil	8 ft., W. nil.
A.T.	16 ft., W. 6 in.	18 ft., W. 1 ft.
	Tinnitus ceased.	
2nd	23 ft., W. 6 in.	25 ft., W. 1 ft.
3rd	30 ft., W. 1 ft.	35 ft., W. 2 ft.
76. Mrs. M. S., aged 37.		
B.T.	4 ft., W. nil	Shout at ear.
A.T.	16 ft., W. 1 in.	6 in., W. nil.
	Tinnitus ceased.	
2nd	18 ft., W. 2 in.	1 ft., W. nil.
77. Mrs. H. D., aged 40.		
B.T.	9 in., W. nil.	2 ft., W. nil.
A.T.	2 ft., W. nil	30 ft., W. 6 in.
	Tinnitus ceased.	
2nd	3 ft., W. 1 in.	30 ft., W. 6 in.
3rd	4 ft., W. 3 in.	33 ft., W. 12 in.
78. A. R. F., aged 40, M.		
B.T.	18 ft., W. 3 in.	8 ft., W. nil.
A.T.	22 ft., W. 6 in.	12 ft., W. nil.
	Tinnitus not ceased.	
2nd	30 ft., W. 9 in.	12 ft., W. 1 in.
79. Mrs. W. W., aged 40.		
B.T.	1 ft., W. nil	1 ft., W. nil.
A.T.	6 ft., W. nil	20 ft., W. 6 in.
	Tinnitus ceased.	
2nd	10 ft., W. 3 in.	30 ft., W. 9 in.
3rd	18 ft., W. 9 in.	30 ft., W. 12 in.
80. Mrs. A. W., aged 42.		
B.T.	At ear.	1 ft., W. nil.
A.T.	6 ft., W. nil	20 ft., W. 1 in.
81. Mrs. G., aged 45.		
B.T.	1 in., W. nil	4 ft., W. nil.
A.T.	6 in., W. nil	20 ft., W. nil.
	Tinnitus ceased.	
2nd	7 ft., W. nil	28 ft., W. nil.
82. Miss A. K., aged 47.		
B.T.	2 ft., W. nil.	3 ft., W. nil.
A.T.	15 ft., W. 2 in.	15 ft., W. 2 in.
2nd	20 ft., W. 6 in.	20 ft., W. 6 in.
83. Miss E. L., aged 48.		
B.T.	1 ft., W. nil	1 ft., W. nil.
A.T.	6 ft., W. nil	12 ft., W. nil.
	Tinnitus not ceased.	
2nd	8 ft., W. 2 in.	14 ft., W. 3 in.
84. M. G., aged 55, M.		
B.T.	3 ft., W. nil	3 ft., W. nil.
A.T.	17 ft., W. 6 in.	17 ft., W. 6 in.
	Tinnitus ceased.	
2nd after 3 yr. interval	22 ft., W. 2 ft.	18 ft., W. 2 ft.
85. Miss E. E., aged 62.		
B.T.	14 ft., W. 1 in.	2 ft., W. nil.
A.T.	24 ft., W. 2 in.	10 ft., W. 1 in.
2nd after 1 yr.	30 ft., W. 3 in.	20 ft., W. 1 in.

Nos. 86 to 100 did not improve after the preliminary treatment.

Conclusion.

I submit that my results show that this method of treatment, when properly carried out, affords the most substantial advance in the treatment of chronic progressive deafness of recent years, and that it deserves more serious consideration from otologists than it has hitherto received. Of the total number of cases, 68 per cent. have definitely improved after treatment. These comprise 81 per cent. of the cases of nerve deafness, 67 per cent. of the cases of chronic otitis media, and 55 per cent. of the cases of otosclerosis. The improvement in so large a proportion of patients, every one of whom had already been treated by the ordinary methods and pronounced incapable of improvement, cannot be lightly dismissed as a mere manifestation of suggestion or auto-suggestion.

As regards tinnitus, the records above show that this treatment not only alleviates it but often causes it to disappear completely. It is not an exaggeration, therefore, to claim that the electrophonoide treatment, when properly carried out, can and often does cure tinnitus.

Clinical and Laboratory Notes.

SUCCESSFUL COLLAPSE OF LUNG BY ARTIFICIAL PNEUMOTHORAX IN ADVANCED FIBROID PHTHISIS.

By C. H. C. Dalton, M.A. Camb., M.R.C.S.,
LATE HOUSE PHYSICIAN, CITY OF LONDON HOSPITAL FOR DISEASES OF THE HEART AND LUNGS, VICTORIA PARK.

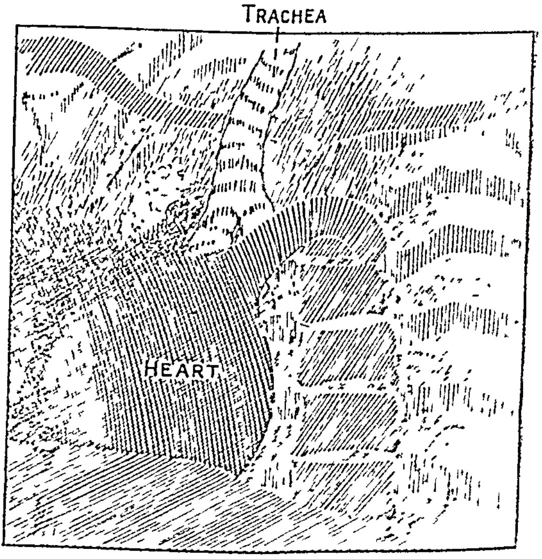
The following case is of considerable interest, in that it shows that almost complete collapse of the affected lung was obtained in a very marked case of fibroid phthisis which, clinically, presented very little hope of this result being obtained.

The patient was a male, aged 22, and was admitted to this hospital on Nov. 7th, 1924, under the care of Dr. F. G. Chandler.

History.—Hæmoptysis in August, 1921; pleurisy and hæmoptysis in August, 1922. Treated at Brompton Hospital and at Godalming Sanatorium; in this hospital from July 18th to Sept. 8th, 1924; transferred to Whitwell Sanatorium, where he had repeated small hæmoptyses and lost weight

Condition on Admission.—Patient was well nourished; not anæmic. Signs of fibroid lung on right side, with large cavity in axilla; many fine superficial crepitations, especially at base; absent tidal movement; heart displaced very considerably to right. Left lung emphysematous; no signs of pulmonary tuberculosis. Tubercle bacilli were present in the sputum.

FIG. 1.



Tracing from skiagram, showing the condition before pneumothorax treatment was commenced. It shows the heart displaced completely into the right side of the thorax, along with marked displacement of the mediastinum.

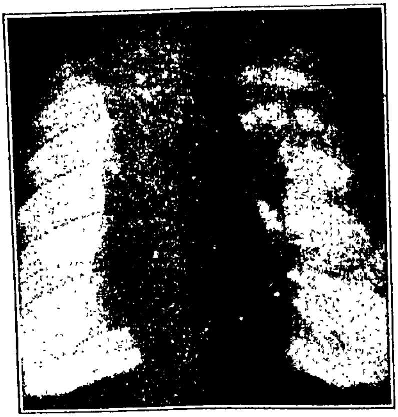
X Ray Examination.—Extensive fibrosis of the right lung; heart displaced completely into right side of chest (see Fig. 1); no signs of active disease in the left lung.

Operation.—I induced artificial pneumothorax on Nov. 11th, 1924, selecting a point situated 1 inch outside the nipple line in the second intercostal space for introducing the Rivière needle. Pleural fluctuations of − 6 + 2 cm. of water were obtained, and 100 c.cm. of air were introduced with a final reading of −2 +0 cm. of water. On the following day the initial fluctuations were −2 +1 cm. water; 650 c.cm. of air were introduced and the final reading was −5 +1; it was probable that a considerable adhesion had been broken down during this refill. Collapse, as illustrated by Fig. 2, was obtained at subsequent refills, without difficulty.

It is observed that the heart and mediastinum, which were previously displaced to a considerable degree, have now been restored to their normal situation. Clinically, the patient is now making excellent progress.

In recommending the adoption of pneumothorax treatment in any individual case, Riviere[1] gives the following points as suggesting the possibility or likelihood of efficient collapse not being obtained owing to the presence of an adherent pleura or extensive adhesions: Long-standing widespread disease; extensive fibrosis with many fine superficial crackling râles; marked displacement of organs; absent tidal movement; a history of pleurisy.

FIG. 2.



Skiagram showing the right lung completely collapsed. It will be observed that the heart and mediastinum have been returned to their normal situation.

It is interesting to note that in this case all these points were present. I would observe further that the pleural space was found at the first attempt, and that at no time did the intrapleural pressure rise above −2 +6 cm. of water.

I am indebted to Dr. Chandler for his kind permission to publish this case.

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[1] Pneumothorax Treatment of Pulmonary Tuberculosis, by Clive Riviere, M.D., F.R.C.P., 1917, Ch. V., p. 60.

SECONDARY SARCOMA OF THE PANCREAS CAUSING JAUNDICE IN A CHILD.

BY JAMES CROOKS, M.B., CH.B. EDIN.,
HOUSE PHYSICIAN, HOSPITAL FOR SICK CHILDREN, GREAT ORMOND-STREET.

THE interest of the following case lies in the clinical manifestations and in the unusual distribution of the metastatic growths.

On March 2nd, 1925, a girl, aged 10 years, was admitted to the Hospital for Sick Children, under the care of Dr. F. J. Poynton, to whom I am indebted for permission to publish this note.

History.—She had been ailing for two months, and had complained of headache. For a week before admission she had recurrent epigastric pain, and vomited twice.

Condition on Admission.—The patient was well developed and nourished, but was languid, pale, and puffy about the eyes. The abdomen was rather protuberant, but had no irregularity of contour; on palpation it was doughy, and the right subcostal region was full and resistant. The edge of the liver could be detected two fingers' breadth below the costal margin, and in the region of the gall-bladder an indefinite rounded mass could be felt. The spleen was not palpable. No evidence of disease of the heart or lungs was detected. Except for the absence of both knee-jerks, the central nervous system showed no abnormality.

While in hospital she continued to suffer from abdominal pains and headache. On the third day an icteric tinge appeared in the skin and conjunctivæ, and a small swelling suggesting bulging of the bone was noted over the lateral half of each supraorbital ridge. Next morning the girl passed an offensive clay-coloured stool, the fæces having been of a normal colour up to this time. Examination of the optic fundi showed swelling of the discs and striate hæmorrhages in the surrounding retinæ. The blood picture was unusual. Of 10,312 white cells 74 per cent. were polymorphs, 12 per cent. small lymphocytes, 8·5 per cent. large lymphocytes, 0·5 per cent. large mononuclears, 0·5 per cent. eosinophils, and 4·5 per cent. transitionals. A few myelocytes and normoblasts were seen. The red cells showed polychromatophilia and anisocytosis. The jaundice progressively deepened, and the stools remained clay-coloured. Attacks of epigastric pain increased in duration and severity, and the patient vomited after any food. The liver increased in size and the rounded swelling projecting below it was more readily felt. The bulgings over the eyes extended; that on the left, growing more rapidly, pushed the corresponding eye forward and downward, corneal ulceration resulting. Pressure over the shafts of the femora caused pain. The child died on March 25th, after three weeks in hospital.

Post-mortem Examination.—Both ovaries were found to be equally enlarged. They were 3 in. long by 2 in. broad, dark purple in colour, lobulated, and partly nodular and partly cystic. The pancreas was converted into a firm mass 6 in. long by 2 in. thick, which was attached by its right swollen extremity to the duodenum, where it surrounded the common bile-duct. On section it was white and cirrhotic in the centre, and hæmorrhagic at the periphery. The dark grey-green liver reached four fingers' breadth below the costal margin, and the gall-bladder was distended with dark viscid bile. Both the kidneys and adrenal glands appeared healthy. The thymus was large for the age of the child, hæmorrhagic purple in colour, and nodular. A lymph gland at the root of the right lung and another at the bifurcation of the trachea both showed metastatic enlargement. The left orbit was packed with tumour growth, which pushed forward the eye and spread to the frontal bone, causing the swelling over the supraorbital ridge. Tumour growth was present in the right orbit. There were deposits of new growth over the anterior surface of the fourth and fifth dorsal vertebræ, on the internal aspect of the left ramus of the pubis, and on the outer surface of the calvarium. There was a recent extensive subdural hæmorrhage over the vertex of the brain. Histologically very little gland tissue was found in the ovaries. It was replaced by sarcoma of the small round-cell type. The blood-vessels being ill-formed, there was much hæmorrhage. The pancreas was extensively invaded by sarcoma, small groups of acini being widely separated by masses of neoplasm. The thymus showed metastasis of the same type of growth, and the tissue of the lymph gland from the mediastinum was almost entirely replaced by it. Sections of the other tumour masses described also revealed small round-celled sarcoma, while those of the spleen, kidneys, adrenals, and mesenteric glands proved these organs to be healthy. An interesting point was that the liver showed definite early unilobular cirrhosis; the portal tracts were broadened, the small bile-ducts contained bile casts, and in the liver cells were granules of bile-pigment. There was no evidence of metastatic growth in the liver or lungs.

The conclusion was that sarcoma of the ovaries was the primary disease. Sarcoma of the ovary in girls is bilateral in about half the cases.[1] Obstructive jaundice, a rare condition in a child of this age, presenting as it did all the features of the same condition caused by carcinoma of the head of the pancreas in the adult, was due to secondary sarcoma in the pancreas.

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[1] Bland-Sutton: Tumours, Innocent and Malignant, 1922, p. 634.

Medical Societies.

ROYAL SOCIETY OF MEDICINE

SECTION OF MEDICINE.

A meeting of this Section took place on April 28th, Dr. Robert Hutchison, the President, being in the chair.

Metabolism and the Sympathetic System.

Prof. E. Leschke (Berlin University) read a paper on this subject, in which he discussed some of the problems connected with the regulation of metabolism by sympathetic centres in the diencephalon. Until quite recently, he said, the profession concentrated upon the influence of the endocrine glands as the causative agent in the production of these disturbances, and when he first put forward the view that such troubles as diabetes insipidus, dystrophia adiposogenitalis, and some forms of glycosuria had a nervous rather than a glandular origin, he was severely criticised. Research during the last few years, however, showed that there was justification for following the line of Claude Bernard, but in the inter-brain instead of the medulla. The diencephalon was, however, very inaccessible for investigation, and to reach it the same technique as for hypophysectomy had to be employed. The difficulty was increased by the close proximity of the pituitary body. Sometimes in diabetes, &c., the pituitary was very carefully examined, but the diencephalon was not regarded as sufficiently important to examine. Karplus and Kreidl, in 1909, obtained clear evidence of the presence of sympathetic centres in this region, and found that its irritation resulted in pupil dilatation and palpebral retraction, as well as vasomotor changes and sweating. Aschner, in 1912, after stimulation of the hypothalamic region, got glycosuria, polyuria, and contraction of uterus, rectum, and bladder. In the same year the author demonstrated the presence of temperature-regulating centres in the diencephalon—i.e., in the tuber cinereum. After irritation of the hypothalamic region there was found to be a diminution of protein metabolism.

Prof. Leschke abandoned the theory of pituitary causation of the conditions named because neither experimental hypophysectomy nor complete destruction or atrophy of the pituitary gland in the human caused polyuria. He had seen disappearance of diabetes insipidus after encephalitis, which was a cerebral, not a glandular disease. The frequent occurrence of diabetes insipidus after skull injuries was easily explicable, as the infundibular region, fixed to the sella turcica, was one of the most exposed parts of the brain to shock and counter-shock. The persistence throughout life of polyuria, in many cases with nervous troubles, and the absence of true pituitary symptoms favoured the theory which located the cause in the diencephalon. Moreover, in some cases even large doses of pituitrin failed to increase urine concentration. Diabetes insipidus seemed to him to be an interesting example of the autonomic nervous regulation of metabolism. Disturbance of this regulation led to polyuria.

With regard to dystrophia adiposo-genitalis, he did not think the posterior lobe of the hypophysis had much influence on either growth or metabolism; but destruction of the anterior lobe nearly always caused one of Fröhlich's symptoms—i.e., genital atrophy. But all the classical phenomena of Fröhlich's syndrome could be experimentally caused by a mere lesion of the diencephalon. He said he believed that the diencephalic centres always played the foremost part in dystrophia adiposo-genitalis, but admittedly the pituitary body exerted a great influence on the function of those centres. Cases of diencephalic origin seemed the most resistant to any form of therapy. The sympathetic centres regulating metabolism and sexual development were closely related but not identical.

In diencephalic obesity the cause was not a lowering of basal metabolism, and in these cases it was necessary to make a functional diagnosis of metabolism—i.e., at rest and after meals of different kinds. These obese cases showed a tendency to oxidise sugar insufficiently, and to change it at once into a fatty deposit, and the respiratory quotient was high. These patients showed a disturbance of the vegetative nervous balance, with more marked irritability of the para-sympathetic part. A variation of pleuriglandular insufficiency with troubles of sympathetic innervation showed a peculiar pigmentation of the skin, which he termed "dystrophia pigmentosa." It might seem wrong to associate the diencephalon with diabetes now that its pancreatic origin had been proved by the success of insulin therapy, but all glandular activity was under the regulating control of the sympathetic nervous system.

In conclusion, Prof. Leschke said there was a close relation between endocrine glandular activity and sympathetic nervous regulation, and he hoped that by continuing this combined method of research—experimental, clinical, and pathological—a better and more complete understanding of the physiology and pathology of the vegetative nervous system would be arrived at.

Discussion.

Dr. Parkes Weber said he had seen a man 40 years of age whose whole body was covered with small blackish pigment nævi and who had peculiar cushion-like soft parts at the ends of his fingers and toes and ulnar deviation of the fingers. But there was no typical dystrophia adiposo-genitalis. He regarded that case as allied to Recklinghausen's disease, and held that there was tuberose sclerosis of the brain, as for some time there had been a progressive hemiplegia of the right side of the body.

Dr. W. Langdon Brown said he was inclined to agree with Prof. Leschke's conception of the hypothalamus as the head ganglion of the sympathetic nervous system; but he suggested it was possible that the pituitary gland was a mechanism through which the hypothalamus acted—namely, through its posterior lobe. Pituitrin was a powerful antidiuretic which would hold up excessive output of urine for as long as 16 hours. He thought it unlikely that this glandular structure should be placed so close to the hypothalamus unless there were a functional relationship between the two. Pituitrin would even act on the denervated kidney, and he suggested it was put into action through the nervous system. One of the great difficulties in pituitary gland cases was the very partial grouping of the symptoms. Prof. Leschke's suggestion that many of the regulations of the output of water were regulations in the balance between the tissues and the blood was along the present trend of physiology. He had seen a patient for diabetes insipidus, and no evidence of pituitary lesion was found. Some months later she was sent because she had cerebral symptoms, and there were obvious signs of cerebral—probably pituitary—tumour. Yet there was only a slight tendency to polyuria. Ultimately she died, and there was found a tuberculoma of the pituitary body. The case showed that as the lesion advanced in the pituitary diabetes insipidus became a less marked feature. In diabetes too much had been made, he thought, of the pancreatic theory. Allen's work showed that if hyperglycæmia was persistent it would ultimately damage the cell-ions. He did not think all cases were pancreatic in origin, but if hyperglycæmia were allowed to persist they would become so. Diabetes should be regarded as a symptom-complex.

Hypoglycopyresis.

Dr. Otto Leyton read a paper bearing this title. It opened with an argument against the practices of naming diseases after men or according to the most prominent symptoms, the chief objection to the latter being that the most prominent symptom of a disease might be absent in a particular case. A nomenclature based on the morbid causal changes in the tissues was much to be preferred. In 1917 he pointed out that the introduction of small quantities of certain bacterial poisons depressed the carbohydrate metabolism profoundly. When the onset of diabetes mellitus was insidious, there occurred a stage when there was neither polyuria nor glycosuria, but only a slight diminution in the efficiency of carbohydrate metabolism, and this stage he called hypoglycopyresis. There was a close simile between this and hyperthyroidism, as in a mild case of the latter there might be no symptoms unless the patient had an emotional orgy, while in early hypoglycopyresis there was neither polyuria nor glycosuria unless the patient had a carbohydrate orgy. Concerning the question of how the condition could be recognised if there were neither polyuria nor glycosuria, the method he had adopted of recognising deficiency in the carbohydrate metabolism was based on the work of Woodyat and Sansum, who gave intravenous injections of glucose and determined the amount the normal person could receive without developing glycosuria. Dr. Leyton's only modification was that instead of depending on the glycosuria, since renal thresholds differed in various persons, he took samples of blood and assumed that if the sugar in it remained below 0·2 per cent. when the individual was receiving 0·8 g. of dextrose per kilo body-weight per hour for two hours, the carbohydrate metabolism of such person was normal. If he could not burn or store 0·7 g. per kilo body-weight per hour, the carbohydrate metabolism was depressed; but such a person would not be likely to suffer from glycosuria. Dextrose was injected intravenously because oral administration was fallacious. Only the purest dextrose in sealed tins should be used, and it should not have been kept exposed to the air; also distilled water which had been autoclaved directly after distillation should be employed.

Dr. Leyton related several instructive cases. The paper was not discussed.

SECTION OF OTOLOGY.

A MEETING of this Section was held on May 2nd, Dr. J. KERR LOVE, the President, being in the chair.

THE MASTOID EMISSARY VEIN.

Mr. ARTHUR CHEATLE submitted a contribution entitled the Mastoid Emissary Vein and its Surgical Importance. In illustration of his subject he showed a number of specimens and many photographic slides. He said this small vessel had received but little attention from English anatomists, and still less from aural surgeons in their published works, yet its clinical importance on occasion loomed large. In most of the 1500 skulls examined in this connexion the emissary vein was single and small, originating on the outer edge of the lateral sinus groove, just below the bend, and having a short course in the substance of the bone, in an upward and backward direction, and opening on the surface just behind the upper posterior edge of the base of the mastoid. A branch of the occipital artery passed through the same canal. It was not uncommon for this vein to be absent, nor for it to be unilateral. Its diameter might be that of a mere thread, that of a wax match, or it might be one-quarter, three-eighths, or half an inch. Where it was over one-eighth of an inch in diameter it must increase the size of the external jugular vein. The emissary vein might be single at its origin and double at its exit; or double at both origin and exit; or double at origin with three points of exit. The vein was always in the substance of the bone; the canal was never surrounded by cells nor running freely across them. The length of its course might be one-sixteenth to three-quarters of an inch, and its exit might be low down in the digastric fossa, or even entirely behind it. In the lower animals it was frequently associated with the petrosquamosal sinus, but only in the human when it was very large. In the large series of skulls examined there were two only in which the lateral sinus came to an abrupt end, emerging through an enormous mastoid foramen, with complete absence of the lower part of the lateral sinus.

Surgical Importance of the Vein.

There was a risk of opening this vein at its exit in making incisions, or in stripping up periosteum in various operative procedures; also in the treatment of lateral sinus thrombosis, or cerebellar abscess, and in doing decompression. Usually, bleeding from it was trivial, and could be easily controlled, but in cases where the vein was of large size wounding of it might be dangerous. In those instances he had suggested the use of a muscle plug. The vein might constitute a channel for the conveyance of septic thrombosis, and it might be infected from the lateral sinus, which was, indeed, inevitable when the vein was very large. Or this sinus might be secondarily infected after operation for mastoiditis. Sepsis could spread from this vein to the diploë, causing local inflammatory signs in unexpected parts of the skull. If the sepsis extended down the occipital and external jugular veins it would be necessary to ligature and excise the external jugular.

Discussion.

Dr. DAN MCKENZIE spoke highly of the industry displayed in this research, and pointed out the importance of actually cutting specimens, as contrasted with mere examination, in order to gain the needed familiarity. In an emergency, with no antiseptic wax to stop dangerous bleeding, he suggested the use of a plug of ordinary toilet soap, which he had found to be sterile.

Dr. LOGAN TURNER spoke of the great variation in structure encountered by the surgeon practising otology. In a report he had read of a case of fatal cavernous sinus thrombosis and meningitis, the process of infection was found post mortem to have extended from the occipital vein through the mastoid emissary vein, to the lateral sinus, and thence through the superior petrosal to the cavernous sinus.

EXHIBITION OF CASES.

Bilateral Mumps Deafness.

Mr. NICOL RANKIN reported the case of a girl, aged 10, who, three and a half months ago, had a pyrexial attack and some transient vertigo, followed by ringing and thumping in both ears. A fortnight later she suddenly became deaf on the left side, and next day on the right. At this time she was found to have mumps. Vestibular tests showed a normal ocular response, but no vertigo, though prolonged rotation caused vomiting.

Several members stated that they had found pilocarpine for this condition disappointing.—Sir WILLIAM MILLIGAN said that in some of the cases of the kind which he had seen he thought there was a localised basal meningitis.

Sudden Bilateral Nerve Deafness.

Dr. MCKENZIE showed a girl, 10 years of age, who woke up one morning two years ago with almost total deafness on both sides. There was no vertigo, nor any other apparent illness, and the ears had not discharged. Mumps occurred a year after the deafness commenced. The Wassermann test was negative.

The PRESIDENT thought the condition was probably a neuritis of the eighth nerve, though he did not know why it should affect the cochlear branches.—Mr. CHEATLE regarded the case as a functional one; probably the child had been in association with deaf people. He advocated putting the child into new surroundings and treating her with faradism.—Sir JAMES DUNDAS-GRANT agreed with Mr. Cheatle's view, but he did not doubt the deafness. The mother stated that the child had had a fall on the day preceding the onset of the deafness, striking the back of her head.—Sir WILLIAM MILLIGAN thought the suddenness of the onset in this case excluded the neuritis idea. His view was that the diagnosis rested between some vascular change and a hysterical condition. He suggested X ray examination, to search for bone damage as a result of the fall. Auto-suggestion might be a useful form of treatment.

Radical Mastoid Operation Performed by Nature.

Mr. ARCHER RYLAND showed a woman, aged 38, who had suffered from chronic middle-ear suppuration, and had a cholesteatoma; the process had resulted in decay of bone and the complete performance of the radical mastoid operation without surgical interposition. When he saw the patient the whole cavity had been epithelialised.

Sir J. DUNDAS-GRANT said the case enforced the view he had put forward that when the lining of a cholesteatomatous cavity was homogeneous, well attached, and shiny, it should be conserved, as it served the purpose of a skin-graft.

CORRIGENDA.—Dr. Langdon Brown writes: "I am sorry to observe several rather serious inaccuracies in your report of my opening remarks in the debate on Endocrine Therapy at the Royal Society of Medicine (THE LANCET, April 4th, p. 739). The statement that 'The oral method was very uncertain except in a few cases of pituitary administration,' would exclude thyroid extract which I gave as the classical example of successful administration by the mouth. In the sentence 'Parathyroid had a great function as a katabolic agent; if its normal secretion were diminished there was an accumulation of waste tissue in the body,' *thyroid* should be read. The next sentence relates to parathyroid, though I did not claim it would probably produce a 'great' rise in the calcium content of the blood. Nor did I say that adrenalin was of value as a local anæsthetic, but that it was used for its local effect on blood-vessels, as in local anæsthesia, meaning that it prevented too wide diffusion of the local anæsthetic, in this way. In saying that pituitary extract is valuable in diabetes, unless the word 'insipidus' is added the reference might be to diabetes mellitus. I did not claim that 'many [diabetic patients] were able to return to normal life without the continuance of insulin.' I said they were keeping free from glycosuria with a normal blood-sugar; but they continued to diet, which is not returning to a normal life."

Dr. Harold J. Phillips informs us that in the report of the British Congress of Obstetrics and Gynæcology (THE LANCET, May 2nd, p. 921) the remarks ascribed to Prof. M. H. Phillips were made by himself.

Reviews and Notices of Books.

FRACTURES AND DISLOCATIONS.

By PHILIP D. WILSON, A.B., M.D., F.A.C.S., Instructor in Orthopædic Surgery, Harvard Medical School; and WILLIAM A. COCHRANE, M.B., Ch.B., F.R.C.S. Edin., University Tutor in Clinical Surgery, University of Edinburgh. London: J. B. Lippincott Company. With 978 illustrations. Pp. 789+xv. 45*s*.

THIS is a work of international significance. The two names on the title-page assure it a respectful reception from the surgical public, but in America it represents more than individual opinions. We are told in the preface that the facts and views herein stated represent as faithfully as possible those of the staff of the Fracture Service of the Massachusetts General Hospital, Boston, Mass., and that this staff is composed of six surgeons, two from each of the two surgical services and two from the Orthopædic Service. The staff has arrived at practical unanimity on its special subject, and more than this, a conference of representative surgeons of wide experience from different sections of the United States and Canada, which met in Boston in 1922, accepted practically all the recommendations of the Boston Service and made additions to them which are here included.

In a foreword Dr. Daniel Jones, chief of staff of the Massachusetts General Hospital Fracture Service, records his approval on behalf of that staff of the views expressed in this book. As to the British side, it is stated that "in respect to treatment a substantial agreement exists in the two institutions on opposite sides of the Atlantic." This work therefore comes to us with weighty authority behind it, and thus stands in quite a different category from works on fractures which represent the experience and methods of one surgeon only. Throughout the book the functional value of results is insisted upon, and the lessons learnt during the war are applied in as far as they are suitable to the conditions of civilian life. The futility of methods of treatment which secured maybe a perfect anatomical result as regards the bone, but left the patient crippled by adhesions and atrophied muscles, is now apparent to all. The modern surgeon realises to-day that the condition of the soft parts needs almost as much thought and care as that of the bones. The authors have tried to keep in mind the needs of the general practitioner, and therefore have stressed non-operative methods of treatment. They have, we believe, succeeded in indicating lines of treatment which are not beyond the reach of well-equipped practitioners.

The first three chapters are taken up with general considerations and the declaration of principles. The value of early active movements and gentle massage is recognised and the importance of the innovations (often misunderstood) of Lucas-Championnière is emphasised. The authors are strong advocates of the use of plaster-of-Paris, but caution readers against its use in an encircling form. If so applied it should be divided at least on one line. Traction is recommended in nearly every case of fracture in the continuity of a limb and skeletal traction by means of one or other form of "ice-tongs" is advocated in many cases, chiefly because of the freedom which it allows for massage and passive and active movements of neighbouring joints. For compound fractures, débridement is recommended as even more useful in civil than in military surgery. Plating operations and bone suture are rarely to be resorted to. A useful table of the methods of fixation to be used in injuries of the various regions is appended to the third chapter. In this the Thomas splints occupy an important place, as was to be expected. There are 16 chapters on fractures and dislocations of the various regions of the body. Each chapter begins with a consideration of the normal anatomy of the part, illustrated by a plate or plates from standard works on anatomy, and followed by a discussion of the nature and mechanism of the injury and a statement of general principles as applicable to that particular region. The evidence of X ray plates is largely relied upon for diagnosis. The method of treatment which has been found most successful by the authors is then described. Few if any statistics of the relative frequency of different fractures and dislocations are included. The subject of dislocations is treated perhaps too briefly, little stress being laid on their anatomical varieties or on the various methods appropriate to their relief.

A severely practical tone is adopted throughout the book, which is copiously illustrated, largely by photographs and reproductions of X ray plates. The illustrations of cases undergoing treatment by traction, splinting, and other methods leave much to be desired, as is so often the case in books of this sort. It is no doubt desirable that the actual treatment used should be accurately represented, but the mass of irrelevant details which assert themselves in a photograph to the obscuration of more important matters, could well be spared. Diagrammatic drawings faithfully representing the essentials of the photographs would be more valuable as a means of instruction to the reader. We commend the suggestion to the authors for adoption in the second edition, which will no doubt soon be wanted, for the book should make a wide appeal.

SIDE-LIGHTS FROM THE NEW PSYCHOLOGY.

By EVELYN SAYWELL, L.R.C.P., L.R.C.S. Edin. London: The Scientific Press, Ltd. 1924. Pp. 100. 3*s.* 6*d.*

THIS book, addressed to nurses, gives enough of the essentials of modern psychology to help in the understanding and handling of nervous patients and children. It follows to a great extent the teachings of Jung and suffers from that avoidance of difficulties which seems inevitable in books of this nature, though the author is perhaps right in thus making easy the path of the reader. Her separation of psycho-neuroses into central nervous system types and sympathetic nervous system types, however, would have been simpler and more in accord with clinical observations if she had applied it to symptoms and not to patients. There is little attempt at instruction in formal psychotherapy; in fact, Dr. Saywell leads up to the conclusion that the psychological aim of nurses and parents should be to look after their own ideas and adaptations before accepting the responsibility of guiding children. In the handling of a nervous child the treatment of the parent is often the first necessity, and for such an occasion there are some home truths on p. 73, beginning with a reference to "the deadly power possessed by the adult for hindering the development of children. . . ." It remains doubtful whether the method of self-analysis described on p. 91 can produce results. This is a useful little book: it is a pity that the title gives no indication of its nature and aims.

INSTINCT, INTELLIGENCE, AND CHARACTER.

By GODFREY H. THOMSON, Ph.D., D.Sc., Professor of Education and Head of the Teachers' Training Department, Armstrong College, Newcastle-on-Tyne. London: George Allen and Unwin. 1924. Pp. 281. 10*s.* 6*d.*

THE lectures that make up this book were delivered by the author as Visiting Professor of Education at Columbia University, New York City, and they embody what is most useful in psychology as applied to education. Stimulating rather than dogmatic, the author nevertheless rarely leaves us in doubt about his own views, which are freely supported by experimental results, though full weight is given to those theories that are incapable of experimental proof. The reader will, apart from the technical aspect of the subject, obtain a sound idea of the progress that psychology has made from the purely intellectualist standpoint of Herbart to the study of sentiments and instincts from the psycho-analytical point of view. The subject is made interesting and intelligible to the general reader without any sacrifice of range or accuracy; success of that kind is rare in a book on psychology, and this work should find a circulation beyond those whose interests as educationists lead them to read it.

THE MEDICAL ANNUAL, 1925.

A Year-Book of Treatment and Practitioners' Index. Bristol: John Wright and Sons, Ltd. 1925. Pp. 600. 20*s.*

THIS well-known annual, which now appears for the forty-third time, will be as welcome as ever. Almost every member of the medical profession should find it of use. To some it is the means of keeping them abreast of recent knowledge when time and leisure do not permit of more than a rapid glance at the medical weeklies, while to others it will be the reference book which enables them to turn up original papers on particular subjects, a sort of card index of the year's progress. As usual, the editors, Dr. Carey Coombs and Prof. Rendle Short, contribute an introduction in which they survey the tendencies of contemporary medicine. They refer to recent work on the injection of foreign protein for certain disturbances such as migraine, epilepsy, and asthma; to the administration of chlorides in tetany; to the surgical invasion of the field of cardiology with the operations for angina pectoris. At the same time they discuss the trend of opinion on subjects which have been described for the first time in previous editions. For example, they point out that massive doses in radiotherapy appear to be on the wane, that hilus shadows are beginning to be looked upon with suspicion, and that thoracic surgery continues to develop. As usual, this volume contains many excellent plates, and new ones include two of wax models prepared from cases of typhus. The publishers announce that a general index for the ten years 1915–24 will shortly be ready.

SIR EDWIN CHADWICK.

By MAURICE MARSTON. London: Leonard Parsons, Ltd. 1925. Pp. 180. 4*s.* 6*d.*

IN a small volume of 180 pages, one of the "Roadmaker Series," Mr. Maurice Marston has retold, concisely and clearly, the story of Sir Edwin Chadwick's battling for reforms in sanitary and Poor-law administration during the mid-nineteenth century period. An account of his "life and doctrine" appeared in THE LANCET in lecture form on April 19th and 26th, 1924, and it is unnecessary to relate at length the details of his contest for his "sanitary idea" against indifference, apathy, and even the actively hostile opposition of obscurantist and enraged bumbledom.

Mr. Marston, in seven chapters, traces the evolution of reforms in the Poor-law, in public health, and in the factory system, inspired by Chadwick, to the influence which the utilitarian radicalism of his master, Jeremy Bentham, had upon his apt and willing disciple. He claims that Bentham imported principle into legislation by creating a creed, and that while he overthrew paternalism he gave undue regard to *laisser faire.* We are not sure that the author's political predilections may not have gone too far in claiming that Chadwick, as Bentham's pupil, "connected individualism with collectivism" or the beginnings of socialism. Anyway, to Chadwick must be attributed the inauguration of central control and inspection in matters of sanitation, factory life, and Poor-law administration; and while the interests he offended and the incompetents on whose toes he trod hounded him from office in 1854, he survived till 1890 to see "the multitude make virtue of the faith they once denied," and to enjoy the encomiums of Lord John Russell, of Gladstone, of John Stuart Mill, of Florence Nightingale, and of the great Lord Shaftesbury. According to the last named, the antagonists of Chadwick included the Parliamentary agents, the civil engineers, the College of Physicians, the local authorities, the Treasury officials, the water companies, and the Commissioners of Sewers—a truly formidable combination. Yet the judgment of history is that of Sir John Simon, who, in his "English Sanitary Institutions," declares that the public health reforms of the early Victorian epoch were "directly due to the labours of one eminent public servant, Sir Edwin Chadwick." Having claimed his hero as a collectivist, an anti-capitalist, or even a socialist, the author, in his final chapter, calls Chadwick a "reactionary." The charge is based upon his attitude towards bacteriology; yet even the latest developments of that science are emphasising the potency of soil in relation to the seed, and the influence of environment in the warfare against disease. There is still much to be learnt from the old sanitarians, of whom Chadwick was the foremost and the greatest.

The book of Mr. Marston's is ably put together and forms a worthy addition to an attractive series of biographies. We think the author is mistaken in stating that Chadwick stood as a Parliamentary candidate for the University of London, and in 1848 he was made a Companion—not a "Commander"—of the Bath. It was not until a year before his death, at the age of 89, that he received the K.C.B. Recognition of his services was tardy and grudging, but all can agree with Mr. Marston that "now that we are in a position carefully to examine his work and his ideas it is possible to estimate how much gratitude the country owes to the man who left a profitable career at the Bar for an unremunerative position as administrator of reforms for the public welfare."

Elementary Morphology and Physiology.

For Medical Students. By J. H. WOODGER, B.Sc., Reader in Biology in the University of London. London: Humphrey Milford. Oxford University Press. 1924. Pp. 528. 12*s.* 6*d.*

THIS useful and interesting volume differs from many handbooks for the commencing medical student by the wideness of its outlook—even psychological as well as anatomical and physiological—and by the comparatively small space assigned to the usual "types" and their structure. It can be read, therefore, by anyone possessing some knowledge of fundamental biology, as well as by the intending candidate for the preliminary scientific examinations at the outset of a medical career. The student must expect to have to study as well as this book one or more practical text-books such as the late Prof. Milnes Marshall's "The Frog," where all necessary details concerning that animal are to be found. With this warning the text-book before us may be recommended and, indeed, it needs no justification, so thorough is its elementary treatment of essentials. It may, perhaps, be a little difficult for the average beginner to read easily, but is well worth a little extra attention. A special feature of this text-book demands appreciative notice. The majority of the illustrations are original and have been drawn from the author's own preparations. Not only is this so, but other figures are from original sources and not mere replicas of well-known hackneyed illustrations.

Forensic Medicine and Toxicology.

Forensic Medicine. By SYDNEY SMITH, M.D. Edin., D.P.H., Principal Medico-Legal Expert, Egyptian Government, Professor of Forensic Medicine in the Royal Schools of Medicine and Law, Cairo, &c. With an Introduction by Prof. HARVEY LITTLEJOHN, F.R.C.S. Edin., F.R.S.E., Professor of Forensic Medicine, University of Edinburgh. London: J. and A. Churchill. 1925. Pp. 498. 21*s.*

Lectures in Medical Jurisprudence. By WILLIAM NUNAN, B.A., M.D., Police Surgeon of Bombay, Professor of Medical Jurisprudence, Toxicology, and Mental Disease, Grant Medical College, Bombay. With an Introduction by Major-General A. HOOTON, C.I.E., L.R.C.P., M.R.C.S., D.T.M., I.M.S., Surgeon-General with the Government of Bombay. Bombay: D. B. Taraporevala, Sons and Co. 1925. Pp. 162. 5*s.*

WORKS on forensic medicine and toxicology by authors who have practical experience of these subjects in the East are always welcome. India especially and many other Eastern countries afford excellent opportunities for the study of these subjects, not only as regards the quality of the material available, but also the quantity. Further, each country provides special problems from a medico-legal aspect, so that records in writing of various workers serve to broaden our viewpoint of the subject. Probably the total number of deaths from arsenic in this country in a year would not be more than 20–30, whereas the deaths in India alone number hundreds in a year.

The first of these books is a most valuable contribution to the literature of the subject. Dr. Sydney Smith has dealt with his subject thoroughly, but concisely, so that the volume is of moderate dimensions. The fact that he has drawn largely from his own experience serves to render the book more valuable, and the copying of obsolete and often inaccurate statements from other books is avoided. The volume may be recommended to students and practitioners in this country, for although most of his material has been collected in Egypt, the legal procedure pertaining to this country is recorded. The work is divided into 28 chapters and 5 appendices, of which 21 chapters are devoted to forensic medicine and 7 to toxicology. Of the appendices the two more important ones deal with chemical analysis and the examination of weapons and projectiles, and the final appendix discusses some of the special problems of forensic medicine which occur in the East. The book is profusely and helpfully illustrated. That the index gives only the principal reference to the various subjects is to be deplored, since often secondary references are important. Dr. Smith is to be congratulated upon a work which is a survey and a treatise. Prof. Harvey Littlejohn has written a graceful introduction in which he points out Dr. Smith's good fortune in the possession of a medico-legal institute. He expresses the pious hope that one day London will possess a similar institute under the auspices of the Home Office, where all the necessary experts are housed under the same roof. Such an institution would greatly aid the administration of the criminal law, and would be of special benefit to the medical student.

The writer of the second volume, Dr. Nunan, has not only had great experience of his subject, but, like Dr. Smith, has been called upon to teach the subject to students. This work represents the publication of his lectures and makes no claim to be a treatise on forensic medicine. To obtain a real insight into the subject it would be necessary to read between the lines to a considerable extent. The average length of a chapter or lecture is less than ten pages of ordinary octavo, and each could be delivered in some 30 minutes. The material here included is sound, but insufficient in detail, and it is probable that Dr. Nunan's students receive a good deal of extra information when he digresses from his manuscript. Many important medico-legal subjects are not touched on, such as rape, divorce, identity of dead, professional obligations, malpraxis, examination of seminal stains, &c. One or two misprints occur and a few rather more important errors, such as the description of hæmin crystals as being whetstone in shape, and the statement that the guaiacum test will produce a blue colour with no coloured substance except blood. However, in the main the material, as far as it goes, is sound and is simply expressed. Dr. Nunan has had extensive personal experience, and is evidently a careful worker. The book is without an index.

Medical Pathology and Therapeutics.

Traité de pathologie médicale et de thérapeutique appliquée. XXVII.: Diagnostics de Laboratoire. I.: Introduction, Méthodes Usuelles de Laboratoire appliquées au Diagnostic des Maladies. Par MM. les Profs. LETULLE et P. PRUVOST. Paris: A. Maloine et Fils. 1924. Pp. 730. Fr.60.

THE appearance of this volume marks a further step towards the completion of the great series devoted to medical pathology and therapeutics now appearing under the editorship of Prof. Emile Sergent. Therein are considered the general principles involved in the investigation of disease by laboratory methods. Few details of technique are given; it may be the intention to include these in a further volume, for, as it stands, this volume contains insufficient in the way of technical detail to make it of service to the laboratory worker, while it comprises much that cannot be of great interest to the pure clinician.

In almost every section of the volume there is evidence that the author could not quite make up his mind for whom he was writing. Apart from this fundamental defect, it is an amazingly good work; no branch of laboratory diagnosis escapes the notice of the author and many of the sections are exceptionally good. This is particularly so in regard to a number of matters which are usually dealt with rather casually in English works—and for this reason the volume should be of particular use to British workers. Moreover, the author has a keen eye for the non-essential, and never includes matter merely because it has figured in books of the same sort in the past. Thus there are excellent sections on the anaerobes and the spirochætes, but only half a page is devoted to the staphylococci—after all, everything that matters about the staphylococci, so far as medicine is concerned, can easily be said in that space. One of the best sections is that devoted to the examination of the fæces; for some peculiar reason this particular line of investigation seems always to be more competently dealt with in French than in any other language. The section devoted to the examination of the blood by chemical methods serves to show the divergences between present-day French and English teaching in this respect. The very small extent of the section devoted to bacteriology will horrify that class of medical practitioners for whom the apotheosis of therapeutics is an emulsion of micro-organisms.

JOURNALS.

JOURNAL OF PATHOLOGY AND BACTERIOLOGY. Vol. XXVIII., No. 2. Pp. 133-306. April, 1925.—Experimental Soot Cancer, by R. D. Passey and J. Carter-Braine (London). An extract of soot consisting mostly of the ether-soluble bases is very efficacious in producing carcinoma of the skin in mice. Further fractionation of the preparation restricted the carcinogenetic factors to the higher boiling-point fraction.—The Influence of the Fat-soluble Accessory Food Factor on the Initiation of Soot Cancer in Mice, by R. D. Passey and J. L. Woodhouse (London). No perceptible effect.—Evidence that Anaerobes Tend to Produce Peroxide in the Presence of Oxygen, by J. W. McLeod and J. Gordon (Leeds). As in many experiments on the metabolism of bacteria, the quantities of substances involved are so small that it is difficult to reach certain conclusions, but evidence accumulates that anaerobes are anaerobic because they kill themselves with peroxide if oxygen is present. The peroxide is the natural result of bringing a reducing mechanism into relation with oxygen. All bacteria have reducing mechanisms of one kind or another; many protect themselves from the resulting peroxide by producing catalase as well.—Estimation of Urea in Blood by Hypobromite, by F. S. Fowweather (Leeds). Sufficiently accurate for clinical purposes as the author contemptuously says.—Factors Influencing the Flocculation Test for Syphilis, by H. F. Watson (Edinburgh). Fresh heated serum must be used and the results are obtained more quickly if the tubes are shaken.—Arthritic Muscular Atrophy, by A. E. Beryl Harding (London). The acute wasting of the relevant muscles in arthritis has always been something of a mystery; it certainly cannot be explained by disuse alone. The condition can be readily reproduced in rabbits in which an arthritis has been achieved by chemical trauma followed by streptococci.—The Growth of Branching Forms of Bacilli, by A. D. Gardner (Oxford). Long branching Y-shaped forms are found in the stage of rejuvenation of many bacilli (*B. coli*, typhoid, dysentery, cholera, &c.); they grow into normal bacilli at all three free ends simultaneously.—Adenomyoma of the Stomach, by M. J. Stewart and A. L. Taylor (Leeds). See THE LANCET, April 18th, p. 830.—The Investigation of Phytopathogenic Bacteria by Serological and Biochemical Methods, by R. St. John-Brooks, K. Nain, and Mabel Rhodes (London). The curator of the National Collection of Type Cultures has investigated a number of described species of bacteria supposed to cause plant diseases by the methods familiar to the human pathologist. They are readily grouped by these tests; some species fail to establish their individuality.—The Correlation Coefficients of the Urine with Special Reference to Cancer, by C. Powell White (Manchester). Nineteen quantitative determinations on each of 100 samples of urine, 50 from cases with and 50 from cases without cancer, provides the material on which the author exploits what seems to be a novel method of trying to find out which constituents of the urine are excreted together. Statistical crude and partial correlations show, e.g., that sodium and chlorine are associated with water while sulphate is not, that urea is correlated chiefly with creatinin, phosphoric acid, and potassium, &c.—The Renal Circulation Rate in Experimental Oxalate Nephritis, by J. S. Dunn, J. H. Dible, N. A. Jones, and B. A. McSwiney (Manchester). Within normal limits by the technique used.—Diphtheria Antitoxin in the Blood of Normal Horses, by A. T. Glenny (Beckenham). Many horses, but fewer in recent years, which have never been immunised show a certain amount of antitoxin in their blood, are resistant to comparatively large doses of toxin, and produce antitoxin exceptionally well; the source of infection has not been traced.—The Relation Between Dosage and Death Time, by A. T. Glenny (Beckenham). With diphtheria toxin the relation was found to be: (log no. of M.L.D.) (time in hours −10) = 12.—The Time of Combination of Diphtheria Toxin with Living Tissues, by A. T. Glenny and Barbara E. Hopkins (Beckenham). A Schick dose of toxin given intradermally will produce its effect even if 10,000 times its equivalent of antitoxin is injected intravenously 15 minutes later.—The Antigenic Effect of Intravenous Injection of Diphtheria Toxin, by A. T. Glenny and C. G. Pope (Beckenham). More effective than has been supposed.—The Combining Power of Diphtheria Toxin and Toxoid with Antitoxin in Relation to their Antigenic Efficacy, by A. T. Glenny, C. G. Pope, and Hilda Waddington (Beckenham). The authors traverse much classical ground in the light of recent knowledge of skin testing by Schick's method and of Ramon's method of in vitro titration of toxin and antitoxin. The flocculation method gives for the first time a measure of the combining power of a mixture of toxin and toxoid, and it is this that has the nearest relation to antigenic value. Toxin made almost atoxic by treatment with formaldehyde is highly efficient in causing an animal to produce antitoxin.—The Effect of Serum-Sensitiveness and Precipitin Formation on the Efficacy of Diphtheria Toxin in Promoting Antitoxin Production, by A. T. Glenny, Barbara E. Hopkins, and Hilda Waddington (Beckenham) is dealt with editorially in our present issue.—The Titration of Diphtheria Toxin by the Flocculation Method, by A. T. Glenny and U. Wallace (Beckenham). The fact discovered by Ramon that mixtures of diphtheria toxin and antitoxin flocculate at the neutral point makes it possible to evaluate the strength of a toxin or antitoxin in a few hours without using any animals. In some cases a second zone of non-specific flocculation occurs.—Immunological Notes with Special Reference to Diphtheria Toxin and Antitoxin, by A. T. Glenny, C. G. Pope, Hilda Waddington, and U. Wallace (Beckenham). Individual guinea-pigs vary a good deal in their response to an antigen; young animals are less readily immunised than older ones and the route of injection and dilution of the injecta make differences. The antigenic power of toxin modified by formalin to the atoxic condition is improved by the addition of traces of fresh toxin. Modified toxins retain a little of their antigenic power after boiling. Very small doses of toxin may satisfactorily immunise a guinea-pig.—Group and Specific Agglutination, by F. W. Andrewes (London). The author showed previously that cultures of organisms of the Salmonella group consist of two sorts of bacteria sharply distinguishable by their agglutination reactions; in the one specific properties predominate, in the other the properties of the generic group. By absorption tests he now confirms this distinction and measures the amounts of the two agglutinable substances; in the group phase the specific element may be about 1 per cent. of the whole, in the specific phase the proportion of group elements may be even less. The facts are of fundamental importance in the identification and classification of bacteria by these methods.—The Pathological Classification of Goitre, by G. Scott Williamson and Innes H. Pearse (London). A new classification and interpretation of the various anatomical derangements of the thyroid, based on the authors' views of the structure of the gland and its functional changes, which cannot be summarised; all interested in the thyroid should study the original. —Ruptured Aneurysm of the Basilar Artery at Age 17, by J. B. Duguid (Aberdeen). Arteries apparently normal, no syphilis.—Unusually Large Cardiac Aneurysm, by T. Shennan (Aberdeen).—Case of Multiple Cystic Liver, by C. R. Burns (Otago). Without the usual cystic disease of the kidney.—Carcinoma of the Jejunum, by P. P. Lynch (Otago).

THE NATIONAL PHYSICAL LABORATORY.

The report of the National Physical Laboratory for the past year is a volume of 220 pages devoted mainly to accounts of the researches in progress at the laboratory. The opening pages contain the report of the Executive Committee, which is a general survey of the work undertaken and indicates lines of future investigation. It states that the past year has been one of good work and progress. Work for the Service Departments has been maintained on approximately the same scale as in previous years, while there has been an increase in the tests and investigations undertaken for business firms. The need for new buildings has again been pressed. Obviously the pressure of external requirements should not be allowed to interfere with the fundamental research and standardisation work of the laboratory, and it is therefore gratifying to note that the erection of a portion of the new Physics Building will begin this year.

Work in Various Departments.

The main portion of the volume is devoted to the reports of the various departments of the laboratory. These deal with researches and tests in all branches of physical science. The report of the superintendent of the Physics Department, Dr. G. W. C. Kaye, is perhaps of more immediate concern to the medical profession. The number of clinical thermometers tested was 698,665, a slight increase on the figure for the preceding 12 months, the quality of the instruments being well maintained. It was found that thermometers made of soda glass were more likely to develop defects than those constructed of lead (or Jena) glass, and a clause specifying the nature of the glass used for clinical thermometers has therefore been inserted in the regulations. A quick and simple method of distinguishing between soda- and lead-glass instruments is by X ray examination.

In the *radiology* section the number of radium preparations tested was 111, whilst protective materials dealt with numbered 155. It has been necessary to duplicate the apparatus for testing, by the alpha-ray method, the feeble radio-activity of mineral waters and low-grade ores. The number of X ray installations examined was 30 as against 27 for last year. The X ray departments of a number of hospitals have been inspected, and a marked improvement in the construction and in the protection afforded by new X ray apparatus is recorded. Research work is being continued on the all-metal vacuum pumps. It is hoped to modify the annular jet pump with a view to its operating against higher back pressures than 1 mm., a disadvantage in the existing models. In parallel with high vacuum research, preliminary experiments with large cathode X ray tubes have been carried out to determine the design of an X ray tube capable of taking heavy currents and of withstanding increased potentials. A research on the absorption and scattering of gamma rays has been carried out under the direction of Dr. A. E. Owen. Additional standard radium solutions have been made and data have been obtained regarding the absorption of gamma rays and the corrections which have to be applied to the observed radium content of radio-active solutions when measured by the gamma-ray method.

The work on *X ray protection* in association with the X Ray and Radium Protection Committee has been continued. Tests to determine the variation of the lead equivalent of protective materials with the wave-length of the radiation have been made. It was found that whilst the variation was inappreciable for lead glass and lead rubber, it might be considerable for materials such as barium plaster, and the report lays stress on the importance of stating the voltage at which the lead equivalent of a protective material is required.

Dr. Kaye reports that a considerable amount of work has been completed in connexion with *hygrometric measurements.* At the instigation of the Food Investigation Board, the behaviour of various materials when used as substitutes for hair in hygrometric instruments has been studied. An apparatus has also been constructed in the department for producing an air stream of a definite humidity, based on the fact that the aqueous vapour pressure over a solution of calcium chloride is a function of the concentration. The widespread interest in humidity control may be gauged by the fact that the department had inquiries for information from the industries of cotton, woollen, silk, tobacco, laundry, chocolate and confectionery, leather, fruit and egg storage, fish preservation, and mining.

Research in *sound* has been somewhat hampered by the lack of adequate accommodation. Nevertheless, progress has been made and preliminary measurements on the acoustic absorption of large-scale specimens have been carried out. The technique has been mastered of the photography of sound by the spark method and of water waves by the ripple tank method, the latter having already been used in connexion with the designs of the proposed new Parliament House at Belfast.

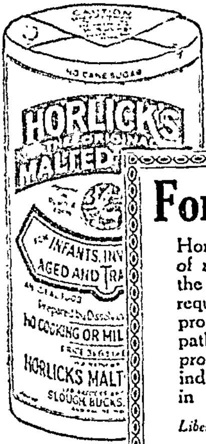
The *Electricity* Department, working in conjunction with the Industrial Fatigue Research Committee of the Medical Research Council, have carried out experiments to determine the relation between illumination and the accuracy and speed of working portions of linotype machines and of compositors' frames in a large printing works. The preliminary investigation showed that experiments cannot be conveniently carried out under actual working conditions, and it is proposed to undertake an investigation under laboratory conditions.

Research work for the *Dental Research* Committee of the Department of Scientific and Industrial Research has been continued in the Metallurgy Section. The alloys of the silver-tin system have been investigated and the results show that the constitutional diagram previously published for these alloys is incorrect. A beginning has also been made with the study of the silver-mercury system, dealing in the first instance with alloys rich in silver.

Projected Extensions.

Plans for the building and equipment of a high voltage laboratory have been developed and tenders have been invited. The proposal is to build a plant capable of giving 600,000 volts three-phase and 1,000,000 volts single-phase current. The behaviour of the newly erected plant for 1,000,000 volts in Paris has been of material help in coming to a decision as to the size of building necessary for the purpose. In the scheme of research for the present year, the Electricity Department will make measurements of very small amounts of power, one watt or less at several thousand volts, and comparison of the different methods of carrying out such measurements will be made. Work on the use of water resistances in the attempt to obtain reactance-free resistors, especially for high voltages, is also contemplated. For those using X ray plants the results of these investigations will probably be of considerable value.

The reader will find the report sufficiently detailed to allow him to understand the object of the various researches, the methods adopted, and the results so far obtained. The volume is indeed a valuable contribution to scientific literature.



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THE LANCET.

LONDON: SATURDAY, MAY 9, 1925.

THE ISSUES BEFORE THE ROYAL COMMISSION ON HEALTH INSURANCE.

THE mass of evidence already laid before the Royal Commission on National Health Insurance is enormous—it is stated to exceed one million words—and it has been our care to summarise this evidence from week to week for the information of our readers. Certain broad issues are emerging, and a note on these may appropriately appear at a time when the representatives of the medical profession are giving their evidence before the Commission. The printed statement which Dr. R. A. BOLAM and his colleagues are expounding to the Commission is given in a very condensed form on another page. The emphasis and amplification of that statement, as Dr. H. B. BRACKENBURY reminded the members of the conference held at Westminster on March 12th, must be entrusted to those who sit in the witness chair and answer the questions of members of the Commission. We hope in due course to give a résumé of the oral evidence so taken. It is in any case important to remember that the proposals on behalf of the profession, considered as a whole, are rather an indication of the lines on which a national health insurance scheme should go forward than a suggestion that they are immediately practicable, financially and administratively.

Let us deal first with the big question whether the dependants of the insured are to be dealt with under an insurance scheme. The evidence of the approved society witnesses fails to reveal any clear demand for such a drastic step at the present time, although the principle receives a very wide blessing, and it is felt that the dependants are not receiving adequate treatment—a fact which more than one of the speakers at the conference of medical representatives was prepared frankly to recognise. Opinion in the medical profession on the question of the inclusion of dependants in the insurance scheme is divided, with the result that the evidence on their behalf is in the nature of a compromise. No one is likely seriously to quarrel with the first fundamental principle set out in that evidence that the medical provision under the National Health Insurance Acts should be available only for those persons who would be unable to obtain it without the help of the insurance scheme. And it is well to let it be known, through the Royal Commission, that, in conformity with that principle, the general practitioners of the country are prepared to provide a medical service for the dependants of insured persons below a certain income limit. But, frankly, it seems to us that the application in practice of an income limit for manual workers, who constitute the vast majority of the insured population, is full of the difficulties which were set out by Mr. E. B. TURNER at the conference to which we have referred. These difficulties were, we believe, felt to be insuperable in 1911, and there is little reason to suppose that the authorities would find them any more ready of solution at the present time. The Insurance Acts are hardly likely to be revised so as to apply an income limit to the insured persons themselves when they are engaged in manual labour, and the question, so far as the dependants of the insured are concerned, will almost certainly, therefore, be found to be that of treating all or none. A scheme for the treatment of all the dependants at the present time is not, we believe, within the region of practical politics.

Witnesses before the Royal Commission have been very definite in deprecating any increase in the weekly insurance contributions, and any remote possibility of such a step for purposes of health insurance developments has disappeared with the introduction by the Government of a contributory scheme of pensions to include widowed mothers and orphans. Developments under the National Health Insurance Acts must, therefore, be found within the existing finances of the scheme. The valuation results which have been recently declared show, we are given to understand, surpluses considerably exceeding those which were revealed in the 1918 valuation. The societies which are fortunate in the enjoyment of these large surpluses have been unanimous in displaying reluctance to any system of pooling, whereby the less fortunate societies can participate in the additional benefits which will flow as a result of these surpluses. The objections of these societies to pooling arrangements can quite well be understood in view of the emphasis which was laid in 1911 on the opportunity which societies would have in selecting members, and on the facilities which would be afforded to insured persons to join societies for their own particular trades and occupations, and generally to enjoy freedom of choice in the selection of societies. Moreover, the societies were to enjoy the fruits of their good management. He would be a particularly bold man who would claim as due to good management the very substantial surpluses now being declared. Societies, presumably recognising that there are other factors in the situation, have in most cases intimated their willingness for some extension of the scope of medical benefit to be of a national character, a portion of the funds being set aside for this purpose, thus in effect reducing the possibility of large future surpluses. The new benefit for which there is almost an insistent demand is a national scheme of dental treatment. It will appear from the evidence of the British Dental Association and other dental bodies, which we shall shortly publish, that the dentists feel equal to maintaining a national service. Inasmuch as there is great force in the argument that a service which would leave a large part of the dentist's bill to be met by the patient would fail just where the most needy members of the community are concerned, nothing less than a complete service free of cost to the patient could well be considered by the authorities. The estimates of the cost of such a service, which vary from 5*s.* to 6*s.* 6*d.* per insured person, seem to be based on a wholly insufficient volume of experience. In particular, the suggestion in the British Dental Association's evidence that the demand rate would appear to be 5 per cent. of the persons entitled to the free treatment appears to us to be quite inadequate when considered in conjunction with the picture which is drawn of the unsatisfactory state of the mouths of the people of this country. It may well be that an extension of medical services in the direction of consultant and specialist treatment and the provision of clinics and laboratory facilities for all of which there is a substantial, though secondary, demand from those who speak for insured persons, may prove much more susceptible of realisation than the more costly scheme of dental benefit. The inclusion of antenatal and maternity services within the scope of medical benefit to the extent recommended in the evidence of the medical profession should also be capable of realisation within the limit of the funds available.

Reviewing the position as a whole, we are forced to the conclusion that until the official witnesses are again before the Commission to demonstrate, as we presume they will be called upon to do, which of the numerous proposals are possible of fulfilment, judgment must to some extent be suspended. We may at least, however, congratulate the medical profession on having their case so skilfully handled as it is in the document which is being expounded this week to the members of the Royal Commission. For the rest, as we have said, we must wait for some further indication of what is financially and administratively practicable, and the official evidence, at least, is likely to be prepared in the fierce light and the chilling atmosphere of finance.

THE RECEDING CHIN.

ORTHODONTICS, or the treatment of irregularities of the teeth and jaws, is a comparatively modern development of dental science. It has made great strides and is attracting an increasing amount of attention from dentists. Much ingenuity has been devoted to the construction of delicate appliances for correcting irregularities of the teeth. Much attention has been given to the many complex factors concerned in the ætiology and pathology of irregularities of the teeth and jaws. The type of irregularity associated with the receding chin is characteristic and easily recognised. It is customary to group irregularities of the teeth in accordance with the deviation from the normal occlusion of the teeth when the jaws are closed. The normal occlusion is such that each tooth interdigitates with two other teeth in the corresponding jaw. Thus, the lower first molar normally meets both the upper first molar and the upper second premolar, and so on. In effect, all the mandibular teeth are slightly in advance of the corresponding upper teeth. The typical superior protrusion of the upper incisors and canines, which is accepted as the customary English type in the Continental comic papers, is generally associated with a normal molar occlusion. In contradistinction to this type of irregularity, there is a class of malocclusion in which the lower molars are posterior to their normal position. The lower first molar instead of meeting the upper molar and second premolar, meets the upper first molar and the anterior third of the upper second molar. Varying degrees are met with, but such a degree may be taken as the average extent of this irregularity. The remaining anterior teeth share in this displacement, with the result that the lower incisors instead of being just behind the upper incisors, occupy a place much posterior to the normal. This gap becomes accentuated by the lower lip getting behind the upper incisors and pushing them out. To a casual glance such a case may seem to be typically one of superior protrusion, but a closer study will reveal the fact that it is the lower jaw which is primarily at fault. The displacement of the lower teeth is not a local irregularity of the teeth in a normal mandible, but is due to a defect of growth of the bone itself. Since the chin is merely the anterior end of the mandible, together with its superficial soft tissues, it follows that in these cases the chin shares in the lack of growth and is on a plane posterior to the normal, thus giving to the facial contour that appearance of a receding chin which is popularly associated with feebleness of will-power. Technically, this irregularity is known as "post-normal occlusion," while in recognition of the fact that it is primarily a defect of mandibular growth it is often spoken of as mandibular retrusion.

Irregularities of the teeth are common and appear to be much on the increase. Of the various types of malocclusion, post-normal occlusion represents a considerable percentage of the cases met with in dental practice. The ætiology is obscure. A view which held ground for a long time, and still has its adherents, is that it follows on nasal obstruction which, in its turn, is chiefly due to adenoid vegetations. Latterly, there has been a tendency to seek its cause in some more deeply-seated defect of growth occurring at a much earlier period of life. A. KEITH and G. G. CAMPION[1] have suggested that both defective growth of the jaws and adenoid vegetations may alike be the expression of some deficiency of endocrine secretion. R. W. WEINBURGER[2] has suggested that the irregularity may be due to some antenatal condition. Certain it is that the irregularity may occur very early in life, long before the permanent teeth come into place, and when the mechanical effects of nasal obstruction could hardly become operative. Considerable success has been attained in its treatment, with results which are not only apparent in the arrangement of the teeth, but also in the alteration of the facial profile. By means of a special kind of plate it is possible to throw the lower jaw forwards so that the molar teeth meet in their proper position. At first only a habit of biting forward is induced, but gradually the new position becomes an anatomical one until a time arrives when the individual can no longer cause the teeth to meet in their original position. The sequence of changes which occur in bringing about this result have not been fully worked out, but it seems probable that actual changes occur in the ascending ramus and condyle. Such a result cannot be guaranteed in every case, but in a sufficient proportion of cases the improvement in appearance is so gratifying as to make the attempt well worth trying.

Since the handicap of resting under the stigma of weakness of character because of this defect of bone growth is very real, there is an additional reason for trying to remedy this irregularity of the teeth. Indeed, the social and economic aspect of post-normal occlusion may be more important than the purely dental aspect and affords, perhaps, the strongest justification for undertaking treatment. The individual of strong character, or who is favoured by fortune, may be able to survive the handicap of a receding chin, but to many a lesser person it must often prove a real hindrance in the stress of competition. Though it would seem highly irrational to correlate weakness of will with this physical defect, it would be rash to assume that there is nothing in this popular prejudice. Just as the adenoid child is thought to be stupid because he is deaf and eventually, because he is neglected, may actually become stupid, so the individual with post-normal occlusion, being regarded as weak, is treated as such and may end up by becoming what his fellows assume him to be. It is conceivable that if the view of KEITH and CAMPION is correct, that the condition may represent an endocrine deficiency, there might be a true correlation of mental defect due to the latter condition. Perhaps the true explanation of the widespread impression may go back to the beginnings of civilisation. The prognathism of primitive man and his ape-like forbears carried with it an appearance of ferocity. In time, as man became more civilised, this impression of animal power associated with massive jaws became transmuted into an impression that a strong jaw represented strength of will and decision. It can be easily understood that the opposite condition of a receding chin should be assumed to represent an absence or diminution of those virile qualities of mental decision which unconsciously we have come to associate with a strongly marked chin.

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[1] Contribution to Mechanism of Growth of Human Face, Trans. Brit. Soc. Study Orthodontics, 1921.

[2] Internat. Jour. Orthodontia, 1913.

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INTERFERENCE IN IMMUNITY RESPONSES.

BY the laws of chance and human good fortune a man seldom has two infectious diseases simultaneously. But one attack by a parasite generally leaves his apparatus of immune response in a condition which is different from its natural state in the sense that it is more facile and more easily roused to action by a second invasion; the effect of one infection, in short, may last till he is subjected to a different one. And to have two infectious diseases at different times is very common. The question of their influence on one another has been a good deal debated and in general along two lines of thought. On the one hand, it is possible that an immunity mechanism which has had experience and practice in responding to, e.g., the typhoid bacillus, will, when subsequently stimulated by, e.g., the paratyphoid bacillus, respond better than it would if it had never experienced anything of the kind before. And how far the first antigen would influence the response to the second would presumably vary with their relationships; close alliance, such as typhoid and paratyphoid, would probably influence the second response favourably, while remote similarity, such as typhoid and diphtheria, might well be without any result. There are many animal experiments which show that this is so and non-specific immunisation can be realised in a variety of ways. In human experience there appear to be no quite clear facts, but the general resistance of urban, as compared to rural, populations when exposed to the same infections under the same conditions illustrates the same phenomenon. On the other hand, we have to consider what would happen if the body is stimulated simultaneously by two antigens. If the two are sufficiently unrelated, we should expect little or no mutual influence, on the assumption that the mechanisms aroused are not the same. But if the two stimulate the same cells in the body it might well be that the tissues, especially at a first attack and in an untrained state, might fail to respond as well to each as if they had had only one to cope with at a time; in other words, the two antigens might interfere with one another. Such interference is known with typhoid-paratyphoid vaccines compared with preparations containing typhoid bacilli only, though whether it is of any practical moment is doubtful, and an interesting case of interference between antigens which are seemingly more dissimilar than these bacilli is described by Dr. A. T. GLENNY, Miss B. E. HOPKINS, and Miss H. WADDINGTON in the last number of the *Journal of Pathology and Bacteriology* (vol. xxviii., p. 305). If a rabbit is injected with horse serum it forms horse precipitins in its blood; if it is injected with a mixture of diphtheria toxin and horse antitoxic serum it forms diphtheria antitoxin; if it receives the toxin-antitoxin mixture while it is forming precipitins in response to an injection of normal horse serum it fails to produce antitoxin. It might be thought that this was due in some way to both the injections containing horse serum, that the precipitin perhaps carried out of action the antitoxin and with it the toxin and the stimulus. That this is not the explanation is shown by the fact that if a rabbit is responding actively by precipitin formation to an injection of cow or goat serum, it equally fails to respond to a toxin-horse-antitoxin mixture by antitoxin production. Non-toxic preparations of diphtheria toxin act as good stimuli in rabbits by themselves without any mixture of antitoxic serum, but these toxoids are without effect in animals which are producing precipitin to horse serum. Presumably, therefore, the whole attention of the mechanism of response may be occupied by one antigen, and there will be no effective excitation if a second comes along at that time. It would presumably be a bad thing to catch diphtheria and tetanus within a few days.

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FORECASTING THE MENTAL DEFECTIVE'S CAREER.

ONE of the responsible tasks falling upon certifying officers of special schools for the mentally deficient is that of estimating the probable future social adaptability of the children, and in particular the occupations for which they may be suited. In his presidential address, now reprinted, to the School Medical Officers' Group of the Society of Medical Officers of Health Dr. J. W. Fraser, of Hull, describes an interesting investigation he has carried out to determine "the value of intelligence tests in the prognosis of the future careers of mentally defective children." Four groups were distinguished—those employed and earning more than £1 per week, those earning less, those unemployed, and those in institutions. His figures show no definite evidence of relation between the intelligence quotient calculated at any one age and the after-career, but where the quotient was calculated for several years in succession, some relation has been established between its fluctuations and the after-history. Dr. Fraser is not unmindful of the fact that intelligence is by no means the only factor in success, but his conclusion, shortly summarised, is that in the case of boys, where there has been an average annual gain of half a year in mental age and a terminal intelligence quotient of 50 or more, if the character is stable, and there is some manual capacity, the prognosis for the future is fairly good. In the case of girls the figures are inconclusive because so many girls were kept at home and had to be reckoned as unemployed. Success in the case of boys was found to be more sure if they were allowed to leave at 14, and in the case of girls retention at school until 16 was a fatal bar to employment at a remunerative occupation. It may, of course, be suggested that it is usually the best cases who are released from school attendance at 14, the cases, therefore, who are more fitted for employment; but it is well known to all certifying officers that the retention of children in special schools until 16, which is legally compulsory, is a handicap against their obtaining employment, and it can only be justified where there is definite provision for older scholars in trade schools, which should preferably confer no stigma of deficiency upon their pupils. Dr. Fraser was much impressed by the fact that only 7 per cent. of his cases were earning enough to keep themselves, and very rightly urges the importance of the provision of more institutions in which each inmate should carry out profitable work proportioned to his capacity.

THE LATE SIR CLIFFORD ALLBUTT'S BEQUESTS.—Sir Thomas Clifford Allbutt, Regius professor of physic in the University of Cambridge, left estate of the gross value of £56,963. His will contained the following bequests: to the Fitzwilliam Museum, Cambridge, his portrait by Sir William Orpen, and on the death of his wife a quantity of antique furniture and drawings and paintings by noted artists, including Landseer, Crome, Romney, Rossetti, G. F. Watts, J. M. W. Turner, and Fripp; to Gonville and Caius College, Cambridge, three silver and gilt drinking horns or cups (known as Swedish cups), requesting that his name as donor should be engraved thereon; and, subject to private bequests, the ultimate residue of his property to Gonville and Caius College, Cambridge, for Clifford Allbutt Fellowships for medical research or otherwise for the benefit of the said College in the discretion of the Master and Fellows, provided that no part thereof be used for building: £50 each to the British Medical Benevolent Fund and the Medical Charitable Fund for the West Riding of Yorkshire.

Annotations.

"Ne quid nimis."

THE BATEMAN APPEAL.

WE have kept this appeal open because subscriptions have continued to come in, but they are arriving only by driblets, as will have been seen by the acknowledgments. We hope that before closing the appeal some total will be reached signifying to a more marked extent that the medical profession have realised how vitally important to their interests the revision of Dr. Bateman's sentence was. Dr. Bateman was found by a jury to have been guilty of malpraxis meriting a term of imprisonment. When the account of the case was published in THE LANCET it became evident that the issues had not been properly put before the jury, for such tragedies were known to have occurred previously with no question of malpraxis arising, while due value had not been given to the testimony of clinicians. The sentence was accordingly quashed. For the medical profession at large the situation was now seen to have been an extremely serious one, implying that a practitioner in the course of his duties might be involved in a trial where the verdict will lie in the hands of persons quite unable to appreciate what has happened. This is the situation in which Dr. Bateman found himself, while his extrication from it has left him a sorely damaged man. The costs of the appeal were largely defrayed by THE LANCET, and only a small further sum has been received as yet to indemnify him for the loss of practice, to say nothing of his mental anguish.

JEJUNOSTOMY FOR PERITONITIS AND OBSTRUCTION.

IN THE LANCET of April 25th we published a paper by Mr. Seton Pringle in which he advocated jejunostomy in certain cases of diffuse peritonitis. This paper was read before the Royal Academy of Medicine in Ireland and gave rise to an interesting discussion. Jejunostomy is a measure which has been employed for some considerable time now, but has never received very general recognition or been practised extensively, yet it would appear to be a valuable method of treatment in properly selected cases. Patients in whom the operation is particularly called for are those suffering from diffuse pelvic peritonitis, where the inflammatory process affects two regions of the alimentary canal—the pelvic colon and the pelvic coils of ileum. The result is that there is set up a paralytic ileus in the two places concerned. Mr. Pringle believes that the onset of death is accelerated by absorption from the distended bowel above the obstructed areas, especially by the absorption of toxic substances in the small intestine. If these can be drained away from the body, the natural immunity reaction of the patient may be just sufficient to pull him through. He therefore advises that when the abdomen is opened and serious diffuse pelvic peritonitis is found to be present, a high enterostomy above the level of the umbilicus should be performed as a primary procedure. In the past many surgeons who have adopted enterostomy as an adjuvant measure have performed it only when, after the original operation, the patient's condition has become progressively worse. Under these circumstances it is frequently found that the enterostomy does not drain away the intestinal contents, or only begins to do so after two or three days if the patient survives this period, when the need for such evacuation no longer exists. The operation under these circumstances has been performed too late, for the paralysis of the pelvic coils of the intestine has extended upwards to the previously unaffected regions. It would seem quite clear that jejunostomy, if it is to be performed in such cases, should be done at the first operation. It would certainly seem a method more advisable than the ileo-colostomy with cæcostomy recommended by Mr. Sampson Handley. This latter is rather a serious intervention in a patient suffering from such a grave illness.

The advisability of performing jejunostomy for intestinal obstruction is not so evident. Advocates of the method declare that lives will be saved by performing a jejunostomy through a small laparotomy wound without exploration of the abdomen in late cases of intestinal obstruction. Series of cases have been published in support of this view. Jejunostomy is certainly a valuable therapeutic measure when the obstruction is due to a local peritonitis, such as occurs after appendicitis, but it is doubtful whether it could be carried out in a large number of cases of mechanical obstruction, such as that by band, without disaster occurring. The danger run is that the constricted portion of intestine may become gangrenous and perforate into the peritoneal cavity. Although it is true that once obstruction is relieved by jejunostomy there is a tendency for the congested gut at the site of the obstruction to shrink and so be relieved from pressure, yet it would seem too risky to rely upon this as an invariable issue. In the discussion on Mr. Pringle's paper several surgeons related their experiences of the operation, and the general conclusion was that in early cases of septic pelvic peritonitis jejunostomy was a valuable therapeutic adjunct, but that when the inflammation had spread upwards to the abdominal cavity results were not likely to be good.

THE ROYAL ACADEMY.

THE 157th exhibition of the Royal Academy of Arts was opened to the public on Monday last and provided a large number of beautiful things for inspection. And these things are of high level, well arranged, and well hung.

We believe that there is no doubt among those whose official business it is to know that achievement in landscape painting has become definitely of a higher standard and of more varied scope in this country during the last 20 years or so, and there are notable pictures in this exhibition by Mr. George Clausen, Mr. Arnesby Brown, Sir D. Y. Cameron, Mr. Lamorna Birch, Mr. Rex Vicat-Cole, and Mr. Philip Connard which would do honour to any collection of contemporary art. It must also strike an ordinarily observant visitor, as presumably it has struck expert critics, that our general sense of colour as a nation has become larger and truer. Time was when the general idea, for example, of the colour of a nude was that it should be pink or brown, according as to whether the subject was young or old, fair or swarthy; and even in medical journals we have seen some ridicule expended upon that real vision of the artist which was attempting to bring before our eyes the infinite number of direct and indirect tints, reflections, and gradations which are revealed on the bare surface of the body, when subjected to the influences of environment. The man who should now suggest that a green shade suggested putrescence would not be thought funny; everyone would know that he was merely convicting himself of a lamentable lack of observation, and he would have the public against him instead of for him. We have learnt in recent times to see with far more accuracy, and to identify as the truth what we were wont to consider pictorial fallacies. Indeed, we can imagine visitors to the exhibition this year finding that in certain canvases the artists have given us what they think is as much as we are likely to be able to appreciate, and have to that extent defaulted from the real.

The medical portrait is a frequent feature at Academy exhibitions for obvious reasons. A fair number of medical men attain to official positions when a presentation portrait becomes inevitable, and having done so, they have generally acquired the right to wear robes of a sort which by themselves would compel the artist to take an interest in the work. There are, however, this year only two or three pictures which come under the category. Among them is a portrait of Dr. Matthew Hay, by Mr. Charles Sims, one of Sir Humphry Rolleston, by Mr. George Henry, and one of Sir Donald MacAlister, by Mr. Maurice Greiffenhagen. The portrait of Dr. Matthew Hay is on the wall that bears the Sargent portrait of the Marchioness Curzon and Sir William Orpen's cryptic "Man versus Beast." The subject wears scarlet and puce robes to which the artist, as a brilliant colourist, has done full justice. The rather fixed gaze of the eyes is open to criticism, but it is a striking performance. Mr. Henry's presentation of Sir Humphry Rolleston is quiet and dignified. It is essentially a pleasant picture. A characteristic expression of the subject has been faithfully rendered, and the general effect of the dark blue robe is restful and yet important. Of a very different category is the portrait of Sir Donald MacAlister. This is a genuine *tour de force* in reds, only the face being shown and the shoulder line swathed in the scarlets and pinks of the Doctor's gown. The face is presented to us absolutely full, and the colouring is almost harsh in its boldness, while not a stroke has been inserted that does not in some way help to bring out the force and intellectual ability of the man. The picture has, of course, been painted by an artist who has had every opportunity of knowing his sitter personally; it is not entitled "A Presentation Portrait," and many would like to know what is to be its destination.

ARTIFICIAL UNILATERAL PHRENIC NERVE PARALYSIS.

The difference between artificial and "natural" unilateral phrenic nerve paralysis is like that between an artificial and a "natural" pneumothorax. The artificial lesions are almost painless and free from discomfort, whereas when morbid conditions cause either phrenic nerve paralysis or a pneumothorax, the patient is in a parlous state. It is interesting to note in the paper published by Sir Charlton Briscoe in The Lancet of Feb. 21st, that he finds that "most patients with phrenic paralysis are too ill for prolonged examination, and cannot tolerate the supine posture for any length of observation." The question may be raised: Is the phrenic paralysis per se or are the morbid processes causing pressure on the phrenic nerve responsible for the patient's critical condition? It is noteworthy in this connexion that artificial paralysis of one phrenic may not only fail to embarrass the patient, but may even relieve him of a sense of discomfort in the affected side by virtue of section of certain sympathetic filaments running in the phrenic. In a paper published by Dr. C. A. Perret, Dr. C. A. Piguet, and Dr. A. Giraud, in the *Presse Médicale* for April 11th, an account is given of the present position of artificial phrenic nerve paralysis in the treatment of pulmonary tuberculosis. Therapeutic experiments in this field have done much to throw light on the innervation of the diaphragm by the phrenic nerve. A few years ago the surgeons who performed simple division or resection of a short section of the phrenic in the neck were surprised to find how little the diaphragm was affected thereby. Subsequent investigations have shown that several nerve filaments may join the phrenic below the neck, and that if the phrenic is divided in the neck, and its distal end is pulled out slowly so that the filaments joining it lower down can be included in the resected portion, almost complete paralysis of the diaphragm ensues. This process, known as exairesis or evulsion of the phrenic, has been performed by the authors in two cases with considerable success, whereas they did little good in the three cases in which they performed simple phrenicotomy. In one of the cases in which exairesis was performed, and 15 cm. of the nerve was resected, the diaphragm was seen two days later to have ascended a hand-breadth and to be completely immobile. Yet there is no record of any great distress or pain, and, as Mr. H. Morriston Davies pointed out in The Lancet of Feb. 28th, this freedom from pain and respiratory distress would seem to be the rule rather than the exception. Exairesis is evidently a valuable means, in carefully selected cases, of limiting the movements of the lung and thus giving it that rest which is so essential to the healing of tuberculous lesions. It is, of course, the basal lesion which is most suitable for this treatment, and it is well, as pointed out by the authors of the French paper to which we have already referred, that the disease should be of a fibrotic character with a natural tendency to healing.

THE HARVEY MEMORIAL AT HEMPSTEAD CHURCH.

From 1657 to 1883 the body of William Harvey lay in the vault of the Harvey Chapel in Hempstead Church, Essex, whence it was removed in 1883 and re-interred in a marble sarcophagus, provided by the Royal College of Physicians of London, within the church. It is now proposed to rebuild the tower of the church as a further memorial, at a probable cost of £5000, of which £150 have been contributed locally. The parish is small and chiefly agricultural, and it is hoped that laymen as well as the members of the medical profession will contribute. The old tower fell in 1882 and of the five bells the tenor was shattered, the other four escaped injury and are hung in the churchyard. The original tower was a four-sided edifice, somewhat severe in style, in four stories with a battlemented top and two windows with tracery. Times are hard and taxation is high, but medical men of all nations should feel it a duty to erect a tangible memorial of one of the great men of their profession, and we earnestly hope that the scheme may materialise. There is no need to emphasise at this date the importance of Harvey's discovery; suffice it to say that the whole of modern medicine depends upon it. And for those who are Churchmen the restoration of a church tower is an act of grace. Subscriptions may be sent to Dr. Sidney Phillips, Royal College of Physicians, Pall Mall East, to Mr. A. W. Ruggles-Brise, hon. treasurer, Spains Hall, Braintree, or to the Rev. T. P. Conyers Barker, Hempstead Vicarage, Saffron Walden, Essex.

PHTHISIS AND INDUSTRIALISM.

We have already referred[1] to the first and second Harben lectures for 1924, delivered by Prof. E. L. Collis. The publication of these has been completed in the May issue of the *Journal of State Medicine*. The first two were devoted to determining whether, and, if so, in what way, the rise of industrialism in different countries has influenced the prevalence and age-incidence of phthisis. The lecturer claimed the influence to be profound and, from its study, looks upon the occurrence of the disease as a reflection of the existence of malnutrition in early adult life and wear-and-tear in later life. The third lecture deals with the question whether an alteration in age-incidence, such as has taken place for phthisis, might not be a manifestation exhibited when epidemics of infection wax and wane. The records of measles, enteric fever, whooping-cough, diphtheria, influenza, and particularly of scarlet fever are examined. Influenza provides evidence of an interesting occurrence; previous to 1918 the mortality from this disease had displayed a normal curve. Then suddenly, in 1918, the curve altered and came to possess a remarkable peak in early adult life coinciding with the peak for phthisis mortality which had been growing higher and higher at that period of life as food scarcity became more pronounced. The suggestion is made that the similar phenomena thus exhibited by the two causes of mortality occurring at the same time and under similar conditions had a common origin. Only in the case of scarlet fever is a definite move in age-incidence to later years of childhood found to have occurred in the past half-century, while the mortality both from this disease and from phthisis has been falling. When, however, the age-incidence of attack during the rise and fall of epidemics of this disease was closely examined (for this purpose five years admissions to the Glasgow Fever Hospital were employed), no evidence of any significant difference in age-incidence was found; in other words, no support was forthcoming for the view that the move over 50 years is epidemiological rather than social.

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[1] The Lancet, April 25th, p. 880.

The evidence produced in this lecture is at best only evidence by analogy; it has clearly been collected at the expenditure of much time and trouble. But whether, if sound, it really helps to assure us that the fall in phthisis mortality is not a mere dip in a long wave which must inevitably rise again is doubtful. Prof. Collis clearly holds an optimistic view and seeks for foundations for his faith. Possibly others with access to other records will examine them and publish their results, for the matter is one of practical significance in efforts to eradicate tuberculosis. In any case, the effort shown in these lectures to interpret vital statistics in the light of social conditions is to be welcomed.

THE ALLEVIATION OF DEAFNESS.

It is acknowledged by all otologists that the results of the treatment of chronic otitis media, otosclerosis, and nerve deafness have hitherto been disappointing. Only a few weeks ago Dr. J. Kerr Love,[1] President of the Section of Otology of the Royal Society of Medicine, said:

> "Outside of surgical treatment there has not been great advance in otology. We can hardly do more than we could do fifty years ago for the cure of deafness. We are only beginning to try to prevent deafness, and the consequence is that the management of chronic deafness is largely in the hands of the empiricist and the quack."[1]

Any new method, therefore, which afforded a chance of the improvement of chronic deafness would be welcomed. Up to the present the treatment of deafness by so-called re-educative methods has not been received with general approval by otologists either in this country or abroad. There have been, it is true, a few enthusiastic protagonists of the method, such as Dr. J. Helsmoortel, of Antwerp, who published in 1913 a pamphlet on his successful results, and Dr. A. Raoult,[2] of Nancy, who reported in 1913 good results in 35 cases. At a meeting of the Scottish Otological Society in June, 1914, the late Dr. W. G. Porter[3] reported favourable results in a few cases, but the outbreak of war left unredeemed his promise to report further. The method of treatment has laboured and labours under several disadvantages. When it was first introduced into this country it was in the hands of medically unqualified persons. The instrument most commonly employed, the electrophonoide, was sold at what appeared to be an extravagant price; though we are willing to believe that when the intricacy of the mechanism is considered the price is not an extravagant one. It is impossible to give a prognosis regarding the possible success with any deaf patient until a preliminary course of treatment has been undergone. Even after a full course of treatment the improvement in the hearing is not usually permanent; in favourable cases it may continue for two or three years, but more commonly, even according to its most enthusiastic advocates, it does not last for more than six to nine months, when a further course is necessary. The method has, therefore, had to bear such adverse comments as that of Dr. Dan McKenzie, that "the impression exists that in the camp of re-education the smoke of the incense burned to the Golden Calf is just a little too plainly discernible." Dr. A. A. Gray[4] has dismissed the electrophonoide method as negligible because of the results in three of his patients who were treated by it; in two there was no improvement, and in the third the improvement was so slight as to be of no importance. In this country the most important study of the method previously published has been that of Mr. F. F. Muecke,[5] who reported in 1914 that his experience with re-education had not been satisfactory. He treated 36 cases; one was cured (a case of neurasthenic deafness); in three there was definite improvement; ten improved but relapsed later; and 22 remained in statu quo.

The article by Mr. George C. Cathcart in this issue of THE LANCET has, therefore, some importance as being the first categorical summing-up in favour of this method of treating chronic deafness to be published in this country. The instrument he has employed is the "electrophonoide" of Mr. Zund-Burguet, who, we believe, is a teacher of the deaf in Paris. The principle of this instrument is explained in the article, and the treatment apparently consists in vibration of the tympanic membrane, vaso-dilatation of the vessels of the tympanic membrane and the middle ear, and stimulation of the nerve-endings in the internal ear, by vibrating ear-pieces which convey sounds corresponding to the registers of the human voice. Mr. Cathcart makes the very definite statement that of his 100 cases of chronic progressive deafness, selected only in the sense that each had been examined and dismissed as incurable by two or more fellow otologists, 68 per cent. have improved after treatment with the electrophonoide. Making every allowance for possible error, this is not a statement that can be gainsaid wholly by such a suggestion as that "the improvement in the mental condition is produced by such an imposing apparatus."[6] In face of Mr. Cathcart's figures and his restrained presentation of the case in favour of the method, the treatment of chronic deafness by mechanical "re-education" does indeed appear to deserve some serious consideration by otologists.

THE ENDOCRINE FACTOR IN CHRONIC ARTHRITIS.

EXPONENTS of the septic-focus theory of the ætiology of chronic arthritis can point to a long series of cases which have been markedly benefited, if not completely cured, by the removal of some hidden source of toxicity. Opponents of this theory can indicate an equally large army of sufferers who continue in the same condition despite ruthless extirpation of teeth, tonsils, appendix, and every other potential lurking place of bacteria. A possible reason for this discrepancy is put forward by Dr. A. K. Thompson in the *Boston Medical and Surgical Journal* of April 2nd. He points out that focal infection may lead directly to an arthritis, but that it may also produce an endocrine disturbance which causes joint affections in its turn. If this interference with the endocrine system has been induced, the removal of the primary focus will have no effect on the arthritic condition, which is maintained by the failure of the internal secretions. Various observers have noted the association between arthritis or rheumatism and modifications of the thyroid function, either of defect or of an incomplete Basedow's syndrome. Lancereaux and Paulesco have recorded remarkable success through the administration of thyroid in chronic rheumatism. Dr. Thompson divides arthritis into three groups. In the "isotrophic group" he includes all cases which are not manifestly atrophic or hypertrophic; for these the method of treatment by removal of foci, immunisation, shock-therapy or medication, is firmly established. The atrophic group corresponds closely to "rheumatoid arthritis" and is the form most commonly encountered. A derangement in calcium metabolism is probably a potent factor. The vasomotor phenomena of this group have been associated by MacAlister with perversion of the thyroid, and there is, according to Dr. Thompson, distinct evidence of endocrine dysfunction, either hyper- or dys-thyroidism, or the presence of endocrine foci of sepsis. The hypertrophic group corresponds with what is usually known in this country as "osteo-arthritis," and signs of hypothyroidism have been noted in almost all cases. Metabolism is subnormal and there appears to be a hypertrophic diathesis with inability to disperse lime salts properly. The administration of thyroid extract is of particular value in this type of case. There are probably few chronic disturbances of the body which do not in some measure affect the endocrine system, but the therapeutic possibilities of Dr. Thompson's conception are of great interest to the practitioner. Any way of relieving, if not of curing, the painful and disabling joint conditions which are constantly being presented to him is worth serious attention and experiment.

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[1] Jour. Laryngol. and Otol., February, 1925, p. 110.

[2] Arch. Internat. de Laryngol. d'Otol. et de Rhinol., July–August, September–October, 1913.

[3] Jour. Laryngol. and Otol., September, 1914, p. 163.

[4] A. A. Gray, Otosclerosis, 1917, p. 165.

[5] Jour. Laryngol. and Otol., November, 1914, p. 521.

[6] Jour. Laryngol. and Otol., September, 1914, p. 176.

HUXLEY.

Thomas Henry Huxley was born at Ealing on May 4th, 1825, and when he died at Eastbourne on June 29th, 1895, he had been for 20 or 30 years about the best known scientific man in England. With his many fundamental discoveries in zoology and with his many distinctions in other fields, the fact that he was a qualified medical man had little to do. The profession may, however, pride itself on the memory that almost the only regular teaching he ever received was as a medical student at Charing Cross Hospital—a memory revived annually in the Huxley Memorial Lecture—and that it was an appointment as a ship's surgeon in the navy which gave him his practical start in life and the chance of exploring the wonders of the ocean, which he did to such good effect that he was elected a Fellow of the Royal Society at the age of 25 and received a Royal Medal in the following year; in 1881 he became President.

Huxley was in the first place a distinguished comparative anatomist with a bent for philosophical generalisation, and at the same time a horror of letting his imagination run in front of the facts of structure which were before him. For 25 years he worked in that doubting period of biological thought when, among Lyell and Scrope's uniformitarianism, Cuvier's archetypes, Oken's idealism, and the accurate examination of structure by Johannes Muller and his companions, the world was groping its way to the realisation of the broad truth which Darwin drove home in the "Origin of Species." And in the cumulative development of knowledge which led up to the revolution of 1859 Huxley played a prominent part with such contributions as his recognition and delimitation of the Hydrozoa as a natural group and his work on the theory of the vertebrate skull. Once Darwin had provided a mechanical conception of how evolution worked, Huxley was persuaded where the philosophy of Lamarck and Herbert Spencer had failed to convince him. He became one of the most active protagonists of the new doctrine, and his own work, now largely palæontological, centred round it. In the second place Huxley was for 31 years an inspiring professor of natural history at the Royal School of Mines, and when he got facilities at South Kensington in the early seventies he introduced the method of practical class-teaching with types of animals and plants which has been everywhere imitated with such success. As a memorial it would have been appropriate if the "Huxley and Martin" of those early days had not been replaced so largely by the almost equivalent "Marshall and Hurst." And, in the third place, Huxley was a good citizen who felt it laid upon him to rebuke error and propagate truth, and the last third of his life was mostly occupied with his public duties. It is in some ways a little unfortunate that the general public knows him best by his controversial activities. He had a hatred of dogma and privilege and pretence which seems now rather over-fierce, and it is hard for us to be enthusiastic over his polemics with Mr. Gladstone and the Duke of Argyll about the literal truth of Genesis. He hit harder than is customary nowadays, and when he said that you could always remember which side of the heart the mitral valve was on by reminding yourself that bishops were never in the right, he had perhaps forgotten that his first paper to the Royal Society was communicated by the Bishop of Norwich. But our very difficulty in fully sympathising with his position simply means that he and his fellow workers in the cause of freedom of thought succeeded, and it is in large part their work which has led to the broad-minded toleration which makes such controversies impossible in this country—though not in America—at the present day. There was a time when Huxley's name could hardly be mentioned in genteel society; he was a declared agnostic and perhaps he declared it rather loudly. But in calmer days it is not difficult to see peeping out of his writings a rather wistful longing that the intellectual discipline which he had imposed on himself would let him believe a few things which he could not prove. "To do justly and to love mercy and to walk humbly with thy God" was his epitome of an ideal religion.

ONE HUNDRED OUTBREAKS OF FOOD POISONING.

FOOD interests everyone, whether admittedly or not, and food poisoning has a very particular interest. Early in 1921 the Ministry of Health invited the coöperation of the Medical Research Council in investigating outbreaks of food poisoning on lines arranged by the Ministry in consultation with Dr. W. G. Savage, medical officer of health for Somerset. The special report[1] before us gives a plain record of 100 consecutive outbreaks, taken without selection, the large majority of which occurred in the years 1921–23. The problems involved are numerous and complicated, and in spite of the special laboratory facilities provided at Weston-super-Mare and the collaboration of Mr. P. Bruce White working whole-time in the bacteriological laboratories at the University of Bristol, the main features of the subject have not essentially changed since Dr. Savage's report to the Local Government Board in 1913. The present report is practically confined to serious and extensive outbreaks of food poisoning, but only for the reason that records of slight outbreaks are scarcely ever published and are but rarely brought before the public health authority at the right time. On the one hand, the special laboratory itself suffers from the inadequate material sent to it. On the other, all the reported outbreaks of food poisoning are not necessarily such, even when so described in the verdict of a coroner's court. A miner, for instance, who died in the Bishop Auckland Infirmary with symptoms regarded as typical of botulism, was stated in the verdict to have died of poisoning probably caused by tinned tomatoes. Later inquiry elicited the fact that on the day previous to eating the tomatoes he had suffered from stiffness of the neck, which gradually developed into the classical picture of tetanus. Nevertheless, the case was widely circulated in the press as one of botulism. Four children taken ill in a Manchester family, three of whom died, were supposed to have been poisoned by tinned treacle. Evidence, however, pointed to death from some infection, the nature of which could not be fully determined. Idiosyncrasy plays but little part in food poisoning. Contrary to the common supposition that one man's meat may be another man's poison, Dr. Savage and Mr. White state quite definitely that in all the outbreaks they investigated the infectivity rate was high and in general all who ate the incriminated food were made ill.

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[1] Medical Research Council. Special Report Series No. 92. Food Poisoning: A Study of 100 Recent Outbreaks. By William G. Savage, M.D., B.Sc., and P. Bruce White, B.Sc. H.M. Stationery Office. 1925. Pp. 112. Price 2s. 6d.

Of the 100 outbreaks here recorded 66 were due to members of the Gaertner group of bacilli, which the authors now prefer to call the Salmonella group. Four others were due to the dysentery group, 8 were outbreaks of cheese poisoning, 7 of undetected bacterial origin. In no case was any strain of the colon bacillus found responsible for an outbreak. The Salmonella group, therefore, takes the lion's share in the attacks. Concerning the vehicle of infection, canned meat and canned fish accounted for 29 cases in which Salmonella toxins were the cause of poisoning, made-up meat for 10 and other forms of meat for 6 of the 28 cases in which the living bacillus was responsible. Bacilli, the report states, may remain alive but dormant in canned foods for indefinite periods. Great uniformity was recorded in the symptoms of bacterial food poisoning; diarrhœa, vomiting, and abdominal pain being very constant, eye symptoms quite rare. In outbreaks due to undestroyed toxin the attack follows rapidly, two to four hours, after ingestion and the acute effects may pass off within 24 hours or less. Case-mortality is low apart from the 100 per cent. mortality of the one recorded attack of true botulism at Loch Maree in August, 1922. The mortality from living Salmonella strain is put down at 1·2 to 1·3 per cent., although such attacks must always be considered potentially dangerous to life. Death from Salmonella toxin is much more uncommon. There was no death from the eight cheese outbreaks. Milk, although so favourable a medium for the growth of Salmonella bacilli, shows a singularly low case-mortality, less than 0·2 per cent., in fact. As to the path of infection, in outbreak after outbreak the authors could not get beyond the certainty of infection with Salmonella strain. They assert that there is no evidence that such bacilli are natural inhabitants of human or any animal intestines. Habitat outside the animal body, though possible, is mere hypothesis; and extremely few outbreaks of food poisoning in the literature can be ascribed with confidence to infection from a human source. All the available facts suggest contamination of food, originally bacterially sound, with bacilli derived from outside the food. Evidence was obtained of infection of brawn from the mould in which it was made, of meat pies from tank water, of cockles from contaminated sea water; but the authors frankly confess themselves as signally unsuccessful in obtaining proof exactly how and where the specific infecting bacilli originated. Rat or mouse is a possible source; the fly theory is unlikely inasmuch as flies are ubiquitous and multiple outbreaks of food poisoning never have occurred. Of 16 outbreaks of canned meat, of which the place of origin was obtainable, in all but one the meat was packed in South America.

The report concludes with an important section on the means for prevention; first and foremost diffusion of more accurate knowledge of the true nature of food poisoning, leading to careful epidemiological and bacteriological investigation. The authors have been profoundly impressed with the unsatisfactory way in which many cases and many small outbreaks involving a death have been investigated. It should be legally recognised, they think, that made-up meat-foods require special supervision and control; such foods, that is, as brawn, potted meat, meat pies, and sausages, every person carrying on such a business should do so under licence in premises where bacterial contamination is unlikely or impossible. An appendix to the report contains details of all the 100 cases, many of which are reported here for the first time. The report will be a revelation to many how frequent and serious are these outbreaks. The reader will hardly fail to gain the impression that they are avoidable.

THE COLLEGE OF PHYSICIANS IN PHILADELPHIA AND ITS MEDICAL MEMENTOES.

We have received from Dr. W. W. Keen, the present custodian of a cabinet of medical mementoes now in the possession of the College of Physicians in Philadelphia, a pamphlet descriptive of the articles contained therein. The custodianship was founded by Robert Abbe, of New York City, an Associate Fellow of the College. Personal relics of great men, something which they have touched or worked with or worn or used, seem to bring us who live after them (though one of the articles in the cabinet was presented by a living donor, Madame Curie) nearer to the former owners than a picture or statue. The relics in question are the shoe buckles and watch of Benjamin Rush (1745–1813); an inkstand and a lock of the hair of Edward Jenner (1749–1823); a case of instruments used by Joseph (Lord) Lister (1827–1912), and some test-tubes of sterilised milk used by him in his earliest researches on fermentation, which, though exposed to the air, kept sweet for many years and are still unputrefied, though some are mouldy; a model of a crystal of tartaric acid made by Louis Pasteur (1822–1895); and finally a piezoelectrometer used by Madame Curie and her husband in their researches on radio-activity and presented by her. St. George's Hospital preserves with pride the hide of the cow from which Jenner took his first vaccine, and the Philadelphia College of Physicians may rightly boast of its possession of relics of scientific research of equal value. Dr. Keen, in a letter which we have received from him, asks for information about any articles of a similar kind belonging to William Harvey, André Vesalius, or Ambroise Paré, if such there be, as he is anxious, if possible, to add them to the contents of the cabinet.

DR. SAMUEL JOHNSON AND MEDICINE.

Of men of letters who have paid tribute to medicine not the least was Dr. Samuel Johnson, who numbered some of the most influential physicians of the eighteenth century, as well as some less distinguished, among his friends. An interesting account of Dr. Johnson's connexion with medicine and with those who practised it was given by Dr. Robert Hutchison at the social evening of the Royal Society of Medicine on May 4th, where he showed on the epidiascope a series of portraits of the lexicographer's medical friends. Although a victim of almost constant bad health, Dr. Johnson declared that illness was of little expense to him, thanks to the generosity of his physicians, a thought which he developed later into the statement that no estate had ever been raised by medicine. But Dr. Richard Warren, Lettsom, and Fothergill earned huge incomes—proportionately more than any physician earns to-day—therefore it must be supposed that not all distinguished patients paid their fees on Dr. Johnson's scale, who rewarded the services of Warren with a copy of "The Lives of the Poets." Johnson was fond of the society of doctors, and of the nine members of a little club he formed in 1749, three were medical men, one Dr. Richard Bathurst, "dear, dear Bathurst," "a good hater," and a "man after his own heart." Unfortunately, all three physicians came to a sorry end, but many of Johnson's later friends were most distinguished. Chief of them was Dr. Thomas Lawrence, a man of "strict piety and profound learning," William Heberden, "ultimus Romanorum, the last of the learned physicians," and Brocklesby, "a liberal friend." Johnson was, of course, acquainted with the illustrious Lettsom, who formed a very just opinion of Johnson's character—"not polite, but not rude, with a glance like lightning out of a dark cloud"; a more generous description than was given by Dr. William Cuning (one of the founders of the Royal Medical Society of Edinburgh), who described Johnson as "sententious, oratorical, and dogmatic, possessed of a feline malevolence—a most unamiable being."

That Dr. Johnson's own medical knowledge was not inconsiderable is not surprising in a man of such inexhaustible concern in all human affairs. Much of his medical lore was gained from Dr. James, the originator of James fever powder and the author of a medical dictionary, in the compilation of which Johnson assisted. And doubtless he picked up a good deal from his servant and companion, Robert Levett, who had been a waiter in a French coffee-house until some friends subscribed money to enable him to attend medical lectures at St. Bartholomew's Hospital. Levett was practising among the poor when Johnson met him in 1746, and his fees were often paid solely in bacon and gin. Johnson's medical views were surprisingly modern; he was a teetotaller in a hard drinking age and condemned polypharmacy in all its forms, although he was fond of prescribing for himself and for his friends—also perhaps a modern trait. On medical ethics he expressed opinions which he was well qualified to give, and fulminated against snap-shot diagnoses. Though he held that a patient should be told the truth on all occasions, he did not always like to hear it himself, but in his last illness he insisted that nothing be hid from him. He must have been a trying patient to nurse, yet he never feared the surgeon's knife; when Cruikshank the surgeon scarified his legs for dropsy, Johnson, considering the cuts were not deep enough, dug a pair of scissors into his calves, saying to Percivall Pott, "You would not have me, for fear of pain, perish in putrescence." Dr. Johnson had himself, the lecturer said, the necessary qualities of the physician; the lame, the halt, and the blind found a refuge in his house, although it must be admitted he had hardly the bedside manner. At the close of the lecture, the President, Sir StClair Thomson, asked Mr. Augustine Birrell, who was present, to propose a vote of thanks to the lecturer. Mr. Birrell, in a vivid speech, inspired by his love and admiration for the subject of the paper, said that having seen the portraits of these eighteenth-century physicians, he wondered that Johnson's life had not ended prematurely. The amazing thing about Johnson was the interest he aroused in all men—people talked about him during his life, were talking about him still, and would go on talking about him.

THE fund inaugurated a year ago to perpetuate the public services of the late Sir Malcolm Morris has now been closed and the money allocated in providing a bi-annual prize at St. Mary's Hospital, Paddington, to the final year's student best qualified in dermatology, and in endowing an annual public lectureship under the Chadwick Trust upon the preventive aspects of public health and upon dermatology in alternate years.

HUNTERIAN SOCIETY.—A Dinner Meeting of this Society will be held at Simpson's Restaurant, Cheapside, on Monday, May 11th, at 7.30 P.M. After dinner, at about 8.30 P.M., the annual general meeting will be held. When the business of the annual general meeting is concluded Mr. Morley Roberts will read a paper on the Life of Dr. Henry Gawen Sutton.

AN AMERICAN HEALTH CONGRESS.—In order to give health workers from every part of the United States of America a general view of the public health movement in its broadest aspects, the National Health Council at 370, Seventh-avenue, New York City, has organised an American Health Congress to be held at Atlantic City during the week ending May 22nd, 1926. Leading authorities on each phase of the public health movement, such as tuberculosis, cancer, heart disease, blindness, social and mental hygiene, public health nursing, preventable diseases, and positive health education for both children and adults, will present the latest and most authoritative findings and programme for the solution of these problems. In addition to the various associations under the National Health Council it is anticipated that leading health associations of Canada, Mexico, and elsewhere will coöperate in this congress.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CXXI.—THE TREATMENT OF EXCESSIVE LOSS AT THE PERIODS.*

II. WHEN THE UTERUS IS FIBROID, NORMAL IN SIZE, OR UNDERSIZED.

Fibroids.—Fibroids cause excessive loss at the periods, partly by increasing the size of the menstrual area, partly by augmenting the vascularity of the uterus, and partly by interfering with the retractility of its muscular wall. The amount lost bears no constant relation to the size of the tumours. One feature of fibroids is, however, pretty constant—namely, that they prolong menstrual life until well over 50 years. This is an important point to be considered when advising treatment. Menorrhagia due to fibroids should in nearly all cases be treated by removal of the tumour either by (1) myomectomy, or (2) hysterectomy, partial or total. Preservation of the uterus is desirable on several grounds, of which we may place first the potentiality for conception in a patient of child-bearing age. Beyond this, however, the idea of losing the womb is repugnant to most women, even though conception is no longer possible. Moreover, the removal of the uterus seems to hasten by a year or two the natural age-atrophy of the ovaries, so that the climacteric is hastened. A further point is that hysterectomy may have a psychological effect on the sexual attitude of both wife and husband, because desire is checked by the fact that the sexual act has lost its main significance.

Myomectomy, then, is the operation of election, but conservation is only advisable under certain conditions. An important one is that the surgeon should see the patient before her health has been seriously injured by hæmorrhage; where a woman has been bled white, even the amount of blood lost at a normal period is too much for her, and the quickest way to restore her to health is to stop the periods altogether by hysterectomy. Moreover, when the tumours are many and large the operation becomes a more difficult one than hysterectomy. For these reasons surgery should not be delayed, since there is a period in the life-history of all fibroids, be they ever so large, so numerous, or so harmful in their effects when they could be safely removed without sacrificing the uterus. Generally speaking, myomectomy is the proper operation for patients under 40 years of age, and hysterectomy for those approaching 50, while for those of intermediate age the decision depends on individual circumstances. I believe that most fibroids begin to be formed in the later twenties or early thirties, much earlier than is generally thought. I base this view on the fact that though I have now performed myomectomy on many relatively young patients, only twice have I seen new fibroids form, and those very small ones. No rule as regards the size and number of the tumours can be laid down. Large tumours are often easier to remove than small ones. Much depends on their situation in the uterine wall. I have removed as many as 52 fibroids from one uterus, reconstructing the organ afterwards, so that six months later it felt on examination to be absolutely normal. Finally, I would again emphasise the importance of surgical interference as early as possible. When hysterectomy is necessary I believe the subtotal operation to be preferable whenever the cervix is reasonably healthy.

Radium has been advocated in the treatment of certain cases of small fibroids, but I strongly disapprove it. It is a blind proceeding and not unassociated with risk. Anyone who is familiar with the conditions found in a myomatous uterus after removing it knows how different they frequently are from what they were imagined to be before the operation; thus an enlargement held to be due to an interstitial tumour may be found to result from a pedunculated mass, accurately filling the cavity. Radium checks uterine hæmorrhage by destroying the endometrium, but it often destroys some of the musculature as well, and thus a fibroid may be caused to undergo necrosis, a dangerous thing. Moreover, small fibroids are those most suitable for myomectomy.

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* The first section of this article appeared in THE LANCET last week.

X Rays.—The treatment of fibroids by X rays I heartily condemn. It is in effect a revival of the bad old operation of double oöphorectomy for fibroids; ablation of both ovaries led to an acute climacteric, and in a proportion of the cases the periods ceased and the tumour ceased to grow, or partially shrank. The price paid for this relief was an acute "change of life" with all the miseries which accompany it; worse than this in quite a number of cases neither the bleeding nor the growth of the tumour was checked. X rays effect a bloodless oöphorectomy followed by results exactly the same and exactly as variable as the old operation. I have now a number of times had to operate on patients after they had had both ovaries unavailingly destroyed by X rays. Moreover, I have seen irradiation followed by acute septic degeneration of the tumour and by severe X ray burning of the abdominal wall. It is, to my mind, a bad and retrograde procedure which appeals to the fearful patient as a means of escape from "the knife," though the physiological and anatomical alterations produced by it are in reality far more serious than those produced by hysterectomy, whilst the ideal surgical procedure of myomectomy cures without disturbing either function or normal structure.

Menorrhagia with a Normal-sized Uterus.

Patients with a uterus of normal size are more difficult to treat because the cause of the bleeding is more obscure. The conditions which cause an unenlarged uterus to bleed too freely are mainly two—uterine fibrosis and so-called endometritis.

Uterine Fibrosis.—Uterine fibrosis, which is not dependent on subinvolution, is a true inflammatory fibrosis and is typically seen in cases with a history of definite uterine infection. It may follow gonorrhœal, puerperal, and post-abortional infections. The uterus is not enlarged, but it is very hard and fibrous, whilst the endometrium is much reduced in thickness. The menorrhagia is often exceedingly severe, and to complicate matters a large proportion of the patients are quite young women who desire children and have none. Some have previously been operated on for inflammatory disease of the appendages. Curettage is quite useless, though many of these women have been curetted several times and have taken every known uterine styptic.

In such circumstances two courses remain: (*a*) to remove the uterus or (*b*) to use radium. I would, in most instances, remove the uterus, firstly, because it is a useless organ, and secondly, because in many cases it is still the seat of chronic infection. Radium has a better field here than when the uterus is enlarged and much success has been claimed for it. My own experience is that though it checks the bleeding or even stops it altogether for several months, not infrequently the menorrhagia presently recurs and a further dose is requisite. Repetition of the treatment is not without risk. I have seen several cases in which deep necrosis of the uterine wall was produced. My impression is that the first application of the radium produces a condition of low vitality in the tissues affected on which a second application may act with destructive effect. A further objection to radium is that its prolonged or repeated use causes atrophy of the ovaries in the same way that X rays do. This is a very disastrous thing if the patient is young.

So-called "Endometritis."—Cases in which no obvious change in the uterus or uterine wall can be discovered, and yet the woman bleeds too freely at her periods, are most difficult to treat, for we know little of the process of normal menstruation. Many of these cases are labelled as "endometritis," but there is no histological evidence of this condition. It seems reasonable to suppose that there may exist some abnormality of the function of the ovaries or of the glands correlated to them, and on this theory endocrine treatment has been extensively employed of recent years. The results obtained are very unequal, nor do they help us to formulate any scheme of administration. The various ovarian extracts now on the market, together with thyroid, pituitary, and mammary substances, should be tried, but as to which combination is likely to give the best results in any individual case we have no certain knowledge. These, together with the uterine styptics, constitute our first line of attack. It is noteworthy that some of these cases of menorrhagia get well of themselves after all treatment has failed.

Curettage achieves success sufficiently often to be well worth a trial. This failing, *radium* may be tried. Its effect is identical with that of curetting in so far as it produces superficial destruction of the endometrium, but it produces far more fibrosis than does the curette and hence its effect is more likely to be lasting. On the other hand, the dangers and drawbacks referred to above accompany its use.

In place of radium, or following the failure of radium, we have *abdominal hysterotomy* with curettage from above. The operation has the advantage of enabling the surgeon to obtain accurate knowledge of the condition of the uterus and occasionally reveals a definite though unsuspected cause for the bleeding like a small polyp, or a localised thickening of the uterine wall, which can be excised. Finally, we come to those distressing cases where, other treatment having failed and the patient being very anæmic, it is necessary to remove the body of an apparently normal uterus. X ray treatment should never be employed for reasons already given.

Menorrhagia with a Uterus Smaller than Normal.

A small uterus does not necessarily mean a small monthly loss; the most profuse and persistent menorrhagia may proceed from the undeveloped organ, possibly because the defective musculature is unable to close down upon and control the vessels of the uterine wall. Patients with this type of uterus are young and usually unmarried, and are therefore most undesirable subjects for any drastic steps. Endocrine treatment may first be tried in the hope of stimulating further development of the uterus, combined with ergot, styptol, hydrastine, and so forth. This form of menorrhagia may improve after marriage, whilst pregnancy is most desirable since it may result in cure; conception in an undeveloped uterus, though unlikely, is by no means impossible. Curettage should be tried, and radium may be employed seeing that if these measures fail it may be necessary to remove the body of the uterus. This step should not be delayed until the patient has passed into a profound anæmia, for then the risk of operation becomes very great. These cases of "terminal anæmia"—the end-result of severe and prolonged menorrhagia—are not so uncommon. The skin is dead white with a slight lemon tinge; the temperature may be 102° or 103° F.; the pulse is very rapid, up to 160, and "water-hammer" in type; the mind is alert and anxious, but not frightened; and from the vagina flows a steady stream of thin brownish-looking blood, usually with a very unpleasant odour. This state is invariably due to ill-advised persistence in palliative measures long after there has ceased to be any hope in them. Patients so ill will not stand a long operation; the surgeon must remove the uterus in 15 minutes or less in order to save more than a small proportion of them.

Victor Bonney, M.S. Lond., F.R.C.S. Eng.,
Surgeon to the Chelsea Hospital for Women; Assistant Gynæcological Surgeon to Middlesex Hospital, &c.

Special Articles.

THE PROBLEM OF PROSTATECTOMY.

BY CHARLES A. PANNETT, M.D. LOND., F.R.C.S. ENG.,
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THE enlargement which causes prostatic symptoms is most commonly benign in nature. It grows in a gland whose function is on the wane. It can be separated easily from its surroundings. It occupies a surgically accessible position. To begin with, the therapeutic outlook is good, but later, when the inevitable implication of the kidneys has occurred, the situation becomes serious and ultimately life-menacing. There may be no apparent signs of this grave change. The increasing inexorable demands upon the large reserve function of the kidney for ordinary physiological needs bring the patient imperceptibly to the point where he is unable to meet the smallest additional call upon his vitality. Any slight disturbance may precipitate a catastrophe; an operation will certainly do so. The root of all this trouble is the injury which the kidney cells suffer from having to secrete against unusually high pressure. After a certain stage the kidneys of a prostatic always show the changes of chronic interstitial nephritis and the alterations of form due to distension of the calices and pelvis. With this distension goes a distortion of the renal tissue, so that the collecting tubules may take a curved course to their mouths on the pyramids. This sinuous path, because the deformity has taken place gradually, is not accompanied by obstruction, but should the pressure in the kidney pelvis be suddenly lowered by catheterisation of an over-distended bladder, or by suprapubic cystostomy, the elastic recoil of the strained kidney tissue is liable to bring about an obstructive kinking of the collecting tubules, a suppression of urine to which the patient succumbs. At the critical stage of the disease it is dangerous to empty a distended bladder by any route unless it be done gradually. Symptoms of uræmia following rapid evacuation of the bladder have been banished by filling up the bladder again with fluid.

The retention of excretory products the result of the depression of the functional capacity of the kidneys would seem to exert a poisonous effect upon most other body tissues with disturbance of their activities. Cardiac degeneration diminishes the heart's power of response, so that failure may occur. Immunity reactions are enfeebled. There is a greater liability to succumb to infections. The hæmopoietic organs are insufficient, so that an anæmia appears. The removal by leucocytes of the shreddy necrotic walls of the cavity left after prostatectomy, the increased katabolism accompanying a mild febrile reaction, may bring the amino-body content of the blood to a point where the kidneys are inadequate to excrete the urea formed in the liver; or the crippled activity of these organs may be further interfered with by a diminution of the volume of circulating blood from an unavoidable hæmorrhage. In both cases uræmia supervenes. In connexion with prostatic disease the doctor, therefore, has a four-fold aim: (1) To intervene before the obstruction has reached a stage when the kidneys will suffer damage; (2) to recognise how far the patient's health has been undermined by his urinary disturbance; (3) to bring about that temporary degree of recovery which will allow of effective treatment to be carried out with a reasonable amount of safety; (4) to remove the obstruction in such fashion that the immediate risk will be the least possible with ultimate restoration of normal urination.

Decision as to the Necessity for Operative Measures.

Putting aside urinary infection, to which these patients are particularly prone, the first consideration must be the degree of urinary obstruction which exists and whether it has reached such a point that damage to the kidneys is already taking place. The index of this is the volume of residual urine. The existence of urine in the bladder after the act of micturition means that the wall of this reservoir has become permanently stretched, so that, by muscular contraction, it is no longer able to obliterate its cavity completely. That urine can be drawn off by catheter after the failure of natural efforts to expel it is due to the fact that the point of the inserted instrument fixes the apex of the bladder so that the weakened walls are now able to contract closely round the shaft. The proof of this is the ability to withdraw more with a silver than with the less rigid rubber catheter. Now the urine, during micturition, is prevented from flowing backwards up the ureters by the sphincters at their lower ends and the oblique passage of these tubes through the bladder walls. When the bladder has been sufficiently distended, both these protective arrangements fail to act. The sphincters become useless. The ureters run perpendicularly through the bladder wall. They dilate and the kidneys soon have to secrete against unaccustomed pressure. The valve mechanism at the lower end of the ureters becomes incompetent when the residual urine amounts to from three to four ounces. Hence the rule that measures for the relief of prostatic symptoms should be undertaken when the residual urine reaches this amount. The volume of residual urine and the presence and degree of infection determine whether or not prostatectomy should be contemplated. There is no difference of opinion to-day. The advantages of prostatectomy over catheter life have been amply demonstrated; the greater expectation of life which it offers alone is sufficient recommendation. The one essential is that a true estimate of the general condition of the patient be arrived at, so that he shall not knowingly be subjected to a strain beyond his powers to resist.

Determination of the Ability of the Patient to Undergo Prostatectomy Successfully.

It may be said at once that such knowledge cannot be obtained from one test alone. Neither is it possible to say, when considering the result of a particular test, that above a certain value operation is safe, whilst below it disaster will follow. The reports of a number of tests must be brought into review. Those clinical features which are insusceptible of measurement as yet must be given their due weight. In short, the value of the general clinical impression must be acknowledged and indeed acted upon. Signs of imperfect elimination are thirst, a dry furred tongue, loss of appetite, sleeplessness, evidence of loss of weight, often a mental unfitness. The heart sounds may be feeble and breathlessness appear on slight provocation. The hæmoglobin content of the blood may be much diminished. If it be below 60 per cent. the risk of operation is great, for the amount of blood which will be lost during the operation cannot be foreseen, nor can it be always controlled easily. The blood pressure is often high. If it is above 170 or 180 mm. Hg, conditions are not favourable for operative intervention. The state of the kidneys can be judged in a number of ways. If they are much damaged the urine will be of low S.G., 1002–1004, and the patient will pass more than the usual quantity, sometimes three times as much. The quantity of urea in the blood is high. If the urea-nitrogen in the blood be about 20 mg. per 100 c.cm. operation is fairly safe, if it amounts to 25–30 mg. there is considerable risk, if it be over 30 mg. the prognosis is bad. Of the special renal function tests, the best is the urea-concentration test. Many surgeons pay much attention to the phenol-sulphonephthalein test, some to the indigo-carmine excretion. Of them all it is difficult to be dogmatic in fixing the point which separates danger from comparative safety. Thus, generally speaking, in the first test the concentration of urea should reach 1·5 per cent. before prostatectomy can be considered, yet sometimes a patient can be carried through to safety with a concentration under test of only 1 per cent.; and whilst he should be deemed a bad surgical risk if he fails to excrete 30 per cent. of the injected dose of phenolsulphonephthalein in two hours, cases are recorded where the excretion of this dye has been far below this percentage, yet the individual has survived prostatectomy. The kidneys are to be regarded as seriously diseased should the excretion of indigo-carmine be delayed longer than 10 minutes after the intravenous injection of 5 c.cm. of a 0·4 per cent. solution.

Preparation of Patients Unfit for Immediate Prostatectomy.

It is a fortunate fact that the precarious condition due to urinary retention toxæmia can be relieved by draining the bladder under proper precautions. It is astonishing how this simple measure will in a few days alter the whole clinical outlook. Whether urinary function, blood pressure, or general well-being of the patient be taken as the criterion, a very pronounced improvement can be demonstrated; so much so that prostatectomy, which before would certainly have proved fatal, can now be performed with relative immunity. It can therefore be laid down that when the tests detailed above show that much sapping of the patient's vitality has gone on, or when an examination of the urine shows that there is a serious urinary infection, preliminary drainage should always be instituted. This may be done by an indwelling catheter or by making an opening above the pubes. In any case, as has been pointed out, relief of tension should be gradual if there is any considerable degree of retention. Suprapubic drainage is necessary when the infection is severe, when no instrument can be passed, when the patient's urethra is intolerant, or when drainage must be maintained for long. In other cases drainage by catheter has obvious advantages. It not only saves the patient an operation, but it renders subsequent operation more easy. Suprapubic cystostomy has not counter-balancing advantages. Drainage, however it is carried out, always has a pronounced effect upon the patient. For the first four to six days his kidney function will be found to be considerably depressed. He is less fit than before. That is why prostatectomy should never be performed without primary drainage unless the functional tests are extremely good. The kidneys should not be subjected to the insult of drainage combined with operation at one time. The period for which drainage should be maintained varies very much. After an interval, improvement of the patient's condition becomes evident to all tests. Usually this will take place in two weeks, occasionally months of drainage are necessary. Such remarkable recoveries take place in patients with extreme nitrogen retention, as proved by blood estimations when drainage is instituted, that to relieve a prostatic of his hypertrophied gland need hardly ever be regarded as a hopeless problem.

Choice of Radical Operative Technique.

Two points merit brief consideration—the route by which the prostate should be removed, and the method of anæsthesia. The suprapubic operation is performed almost exclusively in this country. It is simpler and gives a higher percentage of good results in less skilled hands. The perineal operation has certain advantages. Shock is less, hæmorrhage appears to be less and more under control. The danger of incontinence or recto-vesical fistula can be obviated by careful technique. Neither operation should be performed to the exclusion of the other. The suprapubic route is to be preferred when suprapubic drainage has been necessary, when the enlargement is of the ball-valve type, when cystoscopy has revealed the presence of a stone. In most other cases the perineal route can be followed, with less anxiety for the immediate future.

General anæsthesia by ether is satisfactory on the whole. Spinal anæsthesia makes enucleation easy, but would seem to add to the risk should much blood be lost owing to the drop in blood pressure caused by it. The perineal operation can be performed absolutely painlessly by trans-sacral combined with epidural anæsthesia. This is an excellent method when it can be carried out. Suprapubic operations have also been done under local anæsthesia, but the writer has no experience of this procedure. A reliable easy local anæsthetic method would certainly oust ether narcosis.

Results of Prostatectomy.

Statistics seem to prove that of those patients who survive the operation more than 80 per cent. are restored to normal health. Nevertheless, it must be recognised that the lower operative mortality of the few specialists does not reflect the mortality in the general surgeon's hands. During convalescence, lung complications, sepsis, hæmorrhage, uræmia, or embolism may lead to the death of the patient. The mortality is lowered immensely by the careful pre-operative treatment described above. Uræmia can be almost certainly prevented, the resistance to infection is raised, so that lung complications, sepsis, and secondary hæmorrhage are very less likely to occur. It cannot be too strongly emphasised that precipitancy in prostatic surgery is always out of place. Prostatectomy must follow preliminary preparation and investigation, or unrecognised risks will be taken. It is not an emergency operation.

A patient who has lost his prostate may still suffer from an infection of the kidney which will not clear up. Some patients continue to have a certain degree of frequency. Quite rarely stricture occurs, and occasionally weak control after even a careful perineal operation. This diminished power of control, however, disappears in a month or two when the operation has been properly performed. The majority of patients return to complete health and lead active lives.

BRITISH INSTITUTE OF RADIOLOGY.

THE British Institute of Radiology, of which Sir Humphry Rolleston is President, was founded some eighteen months ago, very largely through the keenness and initiation of the late Sir Archibald Reid, to provide a central bureau to house, coördinate, and extend the work of existing radiological societies. The premises are situated at 32, Welbeck-street, London, and constitute a centre for professional and social intercourse among those interested in radiological work. The *British Journal of Radiology* is published monthly as the official organ of the Institute, and the formation of an adequate reference library is provided for. The nucleus thus formed, however, has absorbed such small capital as was available, and in November of last year an appeal was made to the medical profession, to radiologists, and to the public generally, for £6000 to wipe out bank debts and provide for further development. Subscriptions were asked for in one or more of the following ways: (*a*) By donation to the General Foundation Fund; (*b*) by donation earmarked for the Reid Memorial collection; (*c*) by becoming a member (£1 1*s.* entrance and £3 3*s.* annually) entitling to receipt of journal; (*d*) by becoming a life member (£50) entitling to receipt of journal; (*e*) by becoming an Associate (10*s.* 6*d.* entrance and £1 11*s.* 6*d.* annually).

List of Donations.

We publish herewith a list of the donations received up to April 10th. From a survey of this list it will be seen that radiologists have responded to the appeal very satisfactorily, but their professional colleagues—with a few notable exceptions—have made little response; whilst the non-medical public, beyond a number of the late Sir Archibald Reid's personal friends, has hardly yet been reached. This position can be advanced only by individual members striving to interest their personal colleagues, friends, and patients. The total received in 18 months (up to April 10th), as detailed below, is £1680, and in nine months 52 new members have been enrolled. This effort may surely be quoted as a worthy basis for a further appeal.

	£	s.	d.
Dr. A. E. Barclay and Mr. J. H. Crowe .. each	150	0	0
*Mr. C. Thurstan Holland	110	10	0
Dr. F. Howard Humphris and Dr. R. J. Reynolds .. .. each	52	10	0
*Lieut.-Colonel J. R. Garwood and Sir A. Reid (late) .. .. each	50	0	0
Dr. Robert Knox and Dr. S. Melville .. each	31	9	0
Dr. S. Gilbert Scott	28	18	0
Dr. B. Shires	20	5	0
*Sir E. De La Rue, Dr. J. M. W. Morison, Dr. G. H. Orton, *Mr. C. E. S. Phillips, F.Inst.P., Sir Humphry Rolleston, Dr. L. A. Rowden, and Dr. G. Thornton .. .. each	25	0	0
Dr. N. Finzi	21	0	0
Dr. W. Mitchell	20	10	0
Miss Anderson (per Dr. Reynolds) and Mr. M. R. J. Hayes, F.R.C.S. .. .. each	20	0	0
Dr. H. E. Gamlen	17	17	0
*Mr. A. E. Dean	16	16	0
Dr. H. Black	15	15	0
Dr. F. F. C. Jagger	15	5	0
Dr. Carlos Heuser (Buenos Ayres)	15	0	0
Dr. Agnes Savill	11	11	0
Dr. G. B. Batten, *Mr. H. A. T. Fairbank, F.R.C.S., Dr. W. G. Harvey, Dr. F. Hernaman-Johnson, Dr. A. McGregor, Dr. D. D. Malpas, Dr. H. E. H. Oakeley, *Mr. G. W. Paton, Dr. A. E. Payne, Dr. R. W. A. Salmond, Dr. Shillington Scales, and Dr. F. Storer .. .. each	10	10	0
Dr. R. M. Beath	10	5	0
*Duchess of Bedford, *Miss Hague, *Miss Rae, *Lady Reid, Dr. J. R. Riddell, *Brig.-General W. Tylden, and Dr. Curtiss Webb .. each	10	0	0
Dr. J. E. A. Lynham	8	8	0
Messrs. Watson and Sons	8	2	0
Dr. D. F. Sells and Captain T. W. Barnard .. each	6	6	0
Dr. W. Stewart (U.S.A.)	5	16	5
Dr. C. C. Anderson, Dr. A. A. Burrell, Dr. A. Charles, Dr. W. N. Clemmy, Dr. H. A. Colwell, Dr. G. Cooper, *Dr. T. G. Evans, Dr. W. Garton, Mr. A. C. Gunstone, *Mr. T. Hamblin, Dr. T. G. Hardman, Dr. J. O. Harvey, Dr. G. W. C. Kaye, Dr. G. W. Mitchell, Mr. C. Mansell Moullin, F.R.C.S., Dr. D. M. Muir, Dr. W. B. Prowse, *Misses F. and A. Reid, Dr. O. L. Rhys, Dr. W. M. Robson, Prof. S. Russ, Dr. G. H. Rutter, Dr. H. B. Scargill, Dr. E. I. Spriggs, Dr. H. H. Stewart, Dr. D. Stone, Dr. F. W. Taylor, Miss W. A. R. Tyrer, Mr. E. J. W. Watkinson, Dr. J. H. D. Webster, Dr. J. A. Wilson, and Dr. E. S. Worral .. .. each	5	5	0
Dr. Douglas Quirk (U.S.A.)	5	3	4
Dr. M. J. Hubeny (U.S.A.)	5	2	5
Dr. A. Howard Pirie (Montreal)	3	2	3
*Mr. J. E. Adams, F.R.C.S., Dr. Beverley Bird, Dr. E. P. Cumberbatch, Dr. H. T. George, Dr. J. Gerber (U.S.A.), *Mrs. G. B. Hall, Dr. S. A. Heyerdahl (Oslo), *Mr. Alexander Keiller, *Colonel Macfarlane, *Sir G. Makins, F.R.C.S., Dr. W. Martin, Dr. M. M. Melrose, Dr. F. P. Montgomery, *Miss L. J. Thompson, and *Mrs. Tylden .. .. each	5	0	0
Dr. J. H. R. Heath and Dr. C. J. Heaton .. each	4	4	0
Dr. T. Anstey-Chave, Dr. S. Colyer, Dr. R. Connell, Dr. H. M. Hewlett, Dr. J. R. Levack, Dr. E. McCullock, Dr. A. B. MacLean, Dr. C. Saberton, Dr. E. M. White, and Dr. Sanford Withers (U.S.A.) .. .. each	3	3	0
*Mrs. G. Alexander, *Miss Beausire, Dr. W. E. Boyd, *Dr. J. A. Drake, *Admiral Hawksley, Dr. F. L. Henderson, Dr. E. H. Howlett, Dr. W. C. Lond, Major McGrigor, R.A.M.C., Dr. J. Metcalfe, Major R. B. Myles, R.A.M.C., *Miss Owen, Dr. L. Russell, *Mr. G. Gordon-Taylor, F.R.C.S., and Major E. V. Whitby, R.A.M.C. each	2	2	0
Mr. J. Rowe Dutton	1	6	0
*Dr. Basil Adams, Dr. Wm. Ainslie, Dr. G. Alexander, Dr. T. L. Bunting (late), *Captain and Mrs. Coldbeck, Dr. M. Davidson, Lieut.-Colonel K. Edgcumbe, R.N., Dr. T. R. Elliott, Major J. R. Hill, R.A.M.C., Dr. A. Hilton John, *Dr. E. M. Knowling, Mr. Cuthbert Lockyer, F.R.C.S., Dr. J. H. P. Paton, *Mr. T. R. G. Roberts, *Mr. C. W. R. Stokes, and *Mrs. M. Thomas .. each	1	1	0
*Colonel R. P. F. Hawksley and Major Kidd, R.A.M.C. .. .. each	1	0	0
Dr. A. H. Laird	0	10	6
*Miss L. R. Reid	0	7	6
Total to April 10th, 1925	£1680	4	5

Note.—Items marked * were sent specially marked for the Reid Memorial Fund.

PROCEEDINGS OF THE
ROYAL COMMISSION ON NATIONAL HEALTH INSURANCE.[*]

(Continued from p. 944.)

EVIDENCE OF THE BRITISH MEDICAL ASSOCIATION.

IN its essentials the printed statement of evidence which is being placed before the Royal Commission at their sittings on April 30th and May 7th is substantially as it appeared in the original statement which was summarised in our issue of Jan. 10th. The differences are rather matters of drafting and emphasis to give effect to views which have been expressed in connexion with the conferences held to receive the views of the delegates from the several districts. The following condensed statement will, we think, sufficiently remind our readers of the points on which evidence is being tendered. We shall, in due course, give a summary of the oral evidence being given in exposition of this statement by Dr. R. A. Bolam, Chairman of Council; Dr. H. B. Brackenbury, Chairman of the Representative Body; Dr. H. G. Dain, Chairman of the Insurance Acts Committee; and Dr. Alfred Cox, Medical Secretary of the British Medical Association.

Authority of the British Medical Association.

Part I. of the evidence sets out that the Association has over 28,000 members, of whom some 19,000 are in Great Britain; that the majority of the members are general practitioners, but that the Association contains a strong representation of every section of practice; that its constitution enables it to ascertain and coördinate the opinions of its members; that the steps which have been taken in circulating papers and calling local and central conferences have been such as to ensure that every section of the profession was consulted; and, finally, that it is especially representative of insurance practitioners, its Insurance Acts Committee having been formally and repeatedly recognised as their official mouthpiece in negotiations with the Government. This part of the evidence is new.

Some General Aspects of the Insurance Scheme.

Though it is recognised that a National Health Insurance scheme is not necessarily, or even probably, the best means of utilising limited resources for the promotion of national health, yet if such a scheme is in existence, regard must be had primarily and constantly to the maintenance of health and the prevention of disease and not merely to the alleviation or cure of morbid conditions when once they have arisen. The existing machinery and the medical officers of the public health service should be brought into close and organic connexion with the insurance scheme. The conference of representative doctors held in 1922 resolved "that the measure of success which has attended the experiment of providing medical benefit under the National Health Insurance Acts system has been sufficient to justify the profession in uniting to ensure the continuance and improvement of an insurance system."

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[*] In previous articles the proceedings of the Commission were reported under the following headings: Introductory Note: The Scope of the Insurance Scheme (see THE LANCET, Jan. 31st, pp. 247–8); The Provision of Medical Benefit (Feb. 7th, pp. 301–3; Feb. 14th, pp. 355–6; Feb. 21st, pp. 403–5); Financial Provisions of the Act (Feb. 28th, pp. 454–7); Medical Certification and the Regional Medical Staff (March 7th, pp. 508–9); The Approved Societies and the Money Benefits (March 14th, pp. 564–5; March 21st, pp. 623–4); Evidence of the Hearts of Oak Society (March 28th, pp. 677–9); Evidence of the National Conference of Industrial Assurance Approved Societies and of the Manchester Unity Approved Society (April 4th, pp. 731–3); Evidence of Independent Order of Rechabites, of Rational Association Friendly Society, and of Miners' Societies (April 11th, pp. 784–6; April 18th, p. 839); Evidence of Mr. Alban Gordon (April 18th, pp. 839–40); Evidence of Joint Committee of Approved Societies, of Stock Exchange and Lloyds' Health Insurance Societies, and of Group of Catholic Approved Societies (April 25th, pp. 889–91); Evidence of the National Insurance Beneficent Society (May 2nd, pp. 943–4).

References to the paragraphs in the printed statements issued as appendices to the reports of the oral evidence are given thus: "App. X. 69," and references to the oral evidence thus—Q. 1369.

The medical attention of the working population has, it is contended, greatly improved in many ways which are set out in the evidence, and this condition has certainly been hastened by the National Health Insurance scheme. On the other hand, the growing volume of regulations and machinery has been regarded by insurance practitioners as oppressive or even menacing, and has by itself deterred many practitioners from taking part in the service at all. Five broad principles are set out as fundamental in any National Health Insurance scheme. They are reproduced at the beginning of each of the following sections of the evidence.

Persons to be Provided For.

General principle: The medical provision should be available for those persons, and only for those persons, who would be unable to obtain it without the help of the insurance scheme.

The present scheme includes without any income limit all manual workers, and non-manual workers with an income limit of £250 a year. Certain classes are excluded. The Association is of opinion that the excluded classes should extend to such persons as bank and insurance clerks, that any income limit should be applied universally, and that unless a lower limit than £250 is generally applied, the limit must be lowered in connexion with any scheme for the inclusion of dependants.

While agreeing that the dependants of poorly paid earners might properly be included in the insurance scheme, a considerable body of opinion within the profession fears that the difficulties may be so great as to make the suggestion of including even these persons impracticable. An extension to all the dependants (numbering probably 23 millions) of the present insured population is wholly unnecessary and would in practice be found almost impossible. The inclusion of any dependants would have to be accompanied by a home nursing service and a lightening of the doctors' duties in regard to records and reports and in other ways, and by an extension of welfare centres. As regards necessitous persons (presumably those at present coming within the Poor-law) the profession is prepared to undertake their treatment if called upon to do so.

Extent of the Provision to be Made.

General principle: The medical provision made for insured persons should be, as far as possible, complete.

The profession desires that the medical services publicly provided under the auspices of local authorities and the treatment (dental, ophthalmic, &c.) benefits provided out of the surpluses of Approved Societies should all be made an integral part of the insurance scheme or brought in proper relationship thereto, and that the provision should be extended so as to include complete consultant and specialist advice and treatment, full laboratory facilities for clinical purposes, residential, institutional treatment so far as is possible with the limited accommodation, dental advice and treatment, such ancillary help as can be given by nurses and masseurs, and an ambulance service. In general, the services should be available only on the general practitioner's recommendation, disputes as to the need for the extra service being settled by an official referee; in the case of dental treatment, however, there might be direct application to the dentist.

The medical personnel of the consultant or specialist service should consist of those registered medical practitioners who satisfy certain criteria as to status similar to those contained in the present medical benefit regulations as to the title of a doctor to give specialist treatment. The decision whether any individual practitioner does, in fact, satisfy these criteria should be in the hands of a local professional committee. In some areas consultant or specialist clinics might be established which might even be the out-patient department of a hospital; there should be proper facilities for exchange of records with the general practitioner and for personal consultation.

In connexion with a suggestion that maternity work should be brought into close and proper relationship with medical benefit, the evidence suggests that:—

> Provision for a woman within the insurance scheme should be for (*a*) antenatal medical examination (if requested by her) and supervision, (*b*) attendance by a registered midwife during normal labour and the puerperal period, (*c*) attendance by the practitioner of her choice during labour and the puerperal period when his attendance is requested by the midwife under defined conditions or when as the result of his antenatal examination he has declared his personal attention to be necessary.

As regards a clinical laboratory service, it is thought that, as a highly trained pathologist would be required whose work could not be confined to that for insured persons, the laboratories should be maintained under other auspices and a suitable contribution made out of National Health Insurance funds. In regard to appliances, it would be a great advantage if the present restrictions could be removed and all necessary appliances supplied; in some cases this might be on loan.

Terms of Service.

General principle: The conditions under which the medical attention is given to the individual should approximate as nearly as possible to those of private practice.

The insured person's freedom to change his doctor at any time ought of itself to solve the majority of questions of supposed neglect or improper behaviour on the part of a doctor. In regard to formal complaints the Association is of opinion that an appeal to the Courts should be possible not only on the ground of improper procedure as at present, but also on the ground that the penalty inflicted was out of proportion to the offence, and that in a case of proposed removal from the service the practitioner should have the right of appeal to a duly constituted central professional committee.

It is represented that the action of the Ministry of Health in a number of recent cases has given rise in the minds of many practitioners to a feeling of injustice or even a suspicion of vindictiveness. If a complaint has been dealt with under one part of the recognised machinery it should not be reopened or penalties inflicted under some alternative machinery, and in any case the propriety or otherwise of any particular method or line of treatment ought not to be made the subject of investigation in connexion with the insurance service

As regards approved institutions, it is urged that their standard of treatment is below that of the panel service, and that it is difficult to argue that they supply any such need of the community as justifies their retention under the general scheme of administration of medical benefit. With regard to certification, the profession looks upon the issue of a false medical certificate as one of the gravest offences of which a practitioner can be guilty. It considers that, in the main, medical certification under the Insurance Acts is remarkably well done, though the witnesses are prepared to reply to any allegations which may be made with regard thereto. It is desirable that the phrase "incapable of work" used in the Act in the certificates should be altered; certificates containing this phrase can be signed honestly only because the words are now understood to have a technical meaning, which, however, needs a pamphlet to set forth accurately.

Administration.

General principle: Medical representatives should be closely associated with the administration of the scheme, and as far as questions of purely professional conduct and treatment are concerned, judgment should be in the hands of purely professional bodies.

The central administration of all health services should be under the control of the Ministry of Health, and the local administration of all these services should be in the hands of a local authority established *ad hoc*, or acting through a statutory committee analogous to the existing statutory education committees of local authorities. Of existing authorities it is probable that county councils and county borough councils would be found the least unsuitable.

If there were such a unification of medical services as those suggested above, this would involve the disappearance of insurance committees and the transfer of the health functions of the Poor-law guardians. It is certain, however, that many of the members and officers of these bodies would be indispensable for the work of the unified authority. Each such authority would have a chief administrative medical officer, who would, no doubt, in most cases be the existing medical officer of health. In each area there would be also a statutory local medical committee.

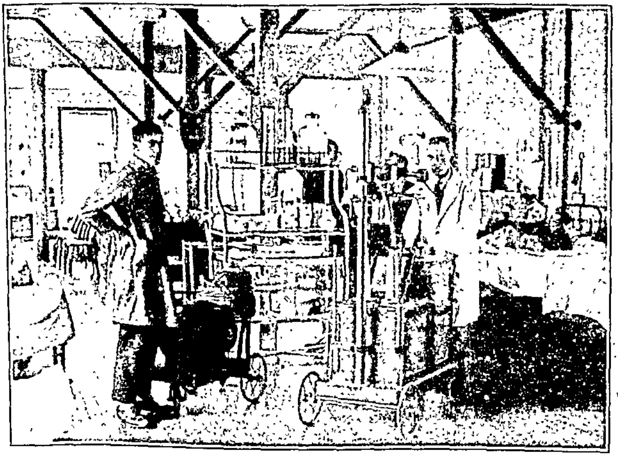
Remuneration.

General principle: Remuneration should be on such a basis as (1) would produce an income not less than that which corresponding responsibility and work should produce in comparable private practice, regard being had to all relevant considerations; and (2) would not prejudice the continuous supply of the best type of practitioner.

The actual amount of the capitation fee having been so recently settled, the profession has no wish to reopen the question at the moment. The fee does not, however, in their view, afford a proper remuneration, and the extra amount allowed for rural conditions requires reconsideration (an appendix to the evidence deals especially with the latter point). If consultant and specialist services are added to the insurance scheme, payment should be for each service or for each session according to a tariff, and the funds for the general practitioner service and the extra services should be kept separate and distinct.

THE REBUILDING OF MIDDLESEX HOSPITAL.

THE fabric of *Middlesex Hospital*, London, which has stood—and stood for so much—for the past 150 years now shows signs of imminent dissolution. Its floors are decayed with dry rot, the ceilings are cracking, and its shallow foundations are insecure. The serving of a "dangerous structure" notice has been averted only by the closing of two wards, the strutting of the basement and 14 wards with heavy baulks of timber, and the undertaking by the hospital authorities that the whole of the old building will be demolished as soon as temporary accommodation for the patients can be found. We reproduce a photograph of one of the strutted wards, where the wooden beams obviously cause as much inconvenience as they must, in a dusty city, be insanitary.



A "crippled" ward.

The board of governors have come to the decision that the only possible solution for the situation is the entire rebuilding of the hospital on its present site at a cost of £500,000. This decision does not depend on the state of the buildings alone, but in all departments expansion and modernisation are required in accommodation and equipment. The work of the cancer department, which will remain untouched under the reconstruction scheme, is indicative of what might be done in other branches of medical science if adequate facilities were available.

Middlesex Hospital is to be rebuilt, not from choice but from necessity, and unless the huge sum of half a million pounds can be raised, the hospital must simply go out of existence. Serious attention is being given to this problem, and a meeting of the court of governors, under the chairmanship of Prince Arthur of Connaught, will be held on Monday, May 11th, when the whole question will be discussed.

There can in this instance be no suggestion of the sale of a valuable site and removal of the hospital, since the site is not the property of the hospital authorities, but is simply held at a nominal rent through the generosity of the Berners family. There are other cogent reasons for the rebuilding of the institution in its present situation—one of the most important being that the district which it serves contains a million and a half of working population. Another reason, of great weight, is that round the present doomed hospital buildings are grouped the modern and up-to-date cancer wing, the research departments, the magnificent Bland-Sutton Laboratories, and the well-equipped medical school. There can therefore, in our opinion, be no doubt that the hospital authorities have decided wisely in this matter. The present site is central, convenient of access both for patients and staff, and is in the midst of the working district it serves. It is also very near some of the busiest thoroughfares in the metropolis, where casualties cannot but be frequent.

There is room for the necessary buildings, and it should be possible to build a thoroughly up-to-date hospital worthy of the great reputation of the present institution, with adequate accommodation, now lamentably short, for the special departments. There should be general sympathy with the authorities in the gigantic task so dramatically imposed upon them. This will need the generous support of a very wide public, and we may hope that many of our readers will be able to help, both directly and indirectly. The work of an institution of this character is of truly national importance, for not only is it concerned with the large numbers of patients who seek treatment there, but both the governing body and the staff have shown real interest in the important matters of medical research and education.

They have made excellent use of the special opportunities afforded them. The hospital has taken a leading part in cancer research, and the excellent original work being carried out in pathology and in biochemistry, as well as in clinical subjects, is apparent from the reprint of articles published during 1924 that we have recently had occasion to review. Close coöperation between those in charge of the patients and the scientific specialists in the various laboratories has long been maintained and has contributed in no small degree to the success of the work of the hospital. It would be in the nature of a national loss, rather than a local calamity, if the hospital ceased to exist and if its varied activities were curtailed, or came to an end.

SCOTLAND.

(FROM OUR OWN CORRESPONDENT.)

The Development of Therapeutics.

Dr. D. Murray Lyon, professor of therapeutics at the University of Edinburgh, delivered his inaugural address in a class-room of the University on April 28th, Prof. Lorrain Smith presiding. In the course of an interesting account of the development of therapeutics, Prof. Murray Lyon said that one might recognise in the teachings of to-day many traces of long discarded theories. In the primitive phase of medicine the prevailing note was superstition, mixed with some sense as well as a certain amount of mysticism. Religion and medicine were closely allied at this stage and were administered by the same authority. Three views as to the causation of disease were common among primitive peoples: the religious view, that disease was due to some spiritual or non-human agency; the magical, that disease was due to human agency; or the natural, that disease was due to some simple natural cause. Traces of each type of belief, he said, might still be found at the present day. As for magic, who had not heard of the hard-headed business man who wore an "electric ring" or carried a potato in his pocket to protect him against rheumatism? The speaker then outlined the history of medical treatment from the brilliant period of the Greek philosophers to the present day of modern specific drugs and methods. While many of our drugs, he said, gave us almost absolute control over certain serious diseases, nevertheless a certain number of maladies were beyond the assistance of the medical profession. The victims of these for a time passed from one practitioner to another in search of cure, and eventually fell into the hands of quacks and patent-medicine vendors. Despite frequent statements to the contrary, medical men, well-knowing the shortcomings of their art, were willing to accept help from any quarter. Manufacturing chemists knew the weakness of medical men for trying out new forms of treatment. Another class of person, the patent-medicine vendor, was also alive to the limitations of the healing art, and sought to take advantage of the credulity of the public. As the law stood, anyone without special knowledge or qualification could produce and offer a nostrum for sale. The serious aspect of "patent medicines" was that many sufferers from recoverable diseases resorted to advertised drugs without ever having consulted a doctor, and wasted valuable time while they passed beyond medical aid. The danger was a real one, and it was time, Prof. Murray Lyon said, that the public awoke to the fact and took into its own hands some means of controlling this trade.

The Attack on Porridge.

Resentment against Prof. Mellanby's alleged attack on a national food-stuff is subsiding. Odd phrases from the Sheffield researches on cereals had been snatched from their context, and the fighting spirit was aroused by headlines in the newspapers denouncing oatmeal as a poison and porridge as a dangerous breakfast dish. Reason has prevailed, and it is seen to be possible to accept without emotion the statement that oatmeal, like other cereals, including barley and rice, contains a substance which hinders the formation of bone in young animals. This substance, the nature of which is obscure, may be regarded as a poison in so far as it interferes with the deposition of lime in bone-formation, thus predisposing children to rickets, and, in adults, at least disturbing the normal "give and take" of lime salts between the blood and bones. An antidote to this "poison" is happily within easy reach in vitamin A of animal fats. Prof. Mellanby, himself a loyal Scot, is naturally aware that thousands of his hardy compatriots have been raised on a diet consisting largely of oatmeal. A famous Edinburgh divine, who died only a few years ago, once told how as a University student 50 years before, he had lived in a garret and eaten nothing but oatmeal and salted herring. Indeed, the mid-term holiday in some Scottish universities is still called "Meal-Monday" because it dates from the time when students went home to have their meal-bags replenished. No doubt the abundant supply of vitamin A in milk, eggs, and fatty fish will continue to protect the porridge-eating Scot from rickets or worse.

University of Glasgow.

Among those on whom the University of Glasgow will confer the honorary degree of Doctor of Laws, on June 24th, are two distinguished surgeons, Sir John Bland-Sutton, President of the Royal College of Surgeons of England, and Mr. Martin T. Tuffier, professor of surgery at the University of Paris.

IRELAND.

(FROM OUR OWN CORRESPONDENT.)

The Dublin Hospitals and State Aid.

A BRIEF discussion arose in the Dail last week out of the vote of £4728 for hospitals and infirmaries. Mr. Burke, Minister for Local Government, pointed out that the hospitals receiving grants from this charity fund had gained a statutory right to the grants at different times and under peculiar conditions. Some of those institutions carried on in anticipation of getting these grants, and it would be a very serious matter to cut them off without having a thorough inquiry into the whole matter. It was a question for a Commission or a Consultative Council, and he hoped at an early stage to set up such a Commission or to consult with such a Council. In the discussion which followed it was stated that it was becoming a matter of increasing difficulty for poor people to obtain admission to the Dublin hospitals, owing to the necessity of keeping paying beds if the hospitals were to keep open at all. From all sides of the House there was a desire that the inquiry should deal with the whole question of the upkeep of the hospitals. It was also suggested that the question whether the number of hospitals should be reduced should be considered.

Society of Surgeons.

Last week the Society of Surgeons of the United Kingdom held its first meeting in Dublin, under the presidency of Sir William Taylor. Some 80 surgeons attended. The mornings of April 30th and May 1st were devoted to general discussions and each afternoon was spent in operations at the several hospitals. On Thursday evening the surgeons dined together in the Royal College of Surgeons. The congress passed off very pleasantly, and the visitors appeared to have enjoyed their first visit to Dublin.

Treatment of Crippled Children.

Sir Robert Jones gave an address last week at the Orthopaedic Hospital, Dublin, on the Treatment of Crippled Children in Open Air Hospitals. He expressed his admiration for the work and results he had seen in the hospital, and said that in Great Britain they had probably 100,000 cripples, and if a great national effort were made and they succeeded in getting the help they required, 90 per cent. of these cripples could be made useful assets. A large proportion of the cases was due to tuberculosis and rickets. Nearly all cases of bovine tuberculosis in children were due to direct poisoning by milk. One out of ten specimens of milk delivered at doors was infected with tubercle bacilli. Having emphasised the importance of fresh air, sunlight, and proper diet for children, he said the reason there was so much deformity in the country was that crippled children were not treated early enough; there was also the important matter of continuity of treatment. In any scheme that could be adopted it was essential that they should have a hospital in the country.

Irish Medical Association.

At a meeting of the Council of the Irish Medical Association held recently, Prof. F. C. Purser, of Dublin, Vice-President of the Association, was nominated as President, and Dr. H. T. Warnock, of Donegal, as Vice-President, for 1925–26.

BERLIN.

(FROM OUR OWN CORRESPONDENT.)

Weak Points in Modern Medical Literature.

BEFORE the German Surgical Congress held recently in Berlin Prof. Sauerbruch delivered an address on certain faults in modern medical writing. He said that in his opinion the number of medical essays published was much too large, the reason being that the younger medical men engaged in scientific work were endeavouring to recover the time lost through the war and the after-war period and that professors in desiring to attract attention to their own clinics or hospitals stimulated their assistants to write. The result was that the work was often done quite superficially, no care was applied to the style, new technical terms were invented unnecessarily, and for the purposes of "padding" results of former investigations were repeated in the text. Concerning the work itself, there was a marked tendency to over-estimate the results of experiments in animals and in laboratories and to apply such results to the human species. He explained that medicine had now reached a crisis, new problems coming to the foreground, and the question of the human constitution was becoming more important than bacteriological and chemical considerations which were formerly the principal objects of medical investigation. He then drew attention to text-books for students. The more surgery is divided into special branches, he said, the more difficult it will be to write a good text-book. Only surgeons with a thorough knowledge of the different branches of surgery ought to undertake that task; he held that it was not desirable that text-books should be written by the collaboration of several authors who might hold divergent views, as such a compilation led to confusion in the student's mind. In handbooks which give the results of modern researches to readers who are already familiar with the subject the collaboration of several authors is necessary. Prof. Sauerbruch's opinion met with the approval of the members and was in the discussion supported by Prof. Bier, of Berlin, who declared that by exclusive experimental and laboratory work the younger generation had lost a good deal of their capacity of observation. He recommended to them to read the works of surgeons of former times who, although being apparently less scientific than the younger medical men, were nevertheless excellent observers from whom they might still learn very much. He mentioned the works of Sir Astley Cooper, of Prof. Dieffenbach, and others.

A Case of Auto-Suggestion.

Dr. Zehden recently showed to the Berlin Medical Society a man who gives public performances of his power of auto-suggestion in music-halls. This man had been wounded in the war, and in the army hospital he noticed that morphia which was administered to him had no effect. By auto-suggestion he succeeded, however, in becoming totally insensible to pain, so that a shell splinter could be removed from his leg without anaesthetics. After the war he turned this faculty of auto-suggestion to account, and in public performance allowed members of the audience to pierce his arms and legs with ordinary unsterilised hat-pins. Dr. Zehden reported that in the state of induced insensibility the man not only does not feel any pain but that neither hæmorrhage nor infection develops. Infection happened only once when, in a performance before a medical audience in Spain, he was unable to reach the state of total insensibility. The man, who calls himself To-Rhama, being the Sanscrit word for self-conqueror, does not show any symptoms of hysteria; his insensibility does not occur in a state of hypnosis but he remains awake and speaks and hears. Another remarkable phenomenon is that the man in that stage can dilate and contract his pupils voluntarily. The man was then pierced with a pin by members of the society and it was noted that not a drop of blood appeared on the pin.

Papilloma of the Stomach.

Before the Berlin Surgical Society Dr. Böttcher lately reported a case of papilloma of the stomach. The patient was a woman, 72 years of age, who had consulted him four years ago for slight gastric troubles. On palpation the presence of a growth of the size of a walnut was ascertained which was, of course, believed to be cancer. Operation was declined and the patient was not seen by him for four years. In 1924 she came again, in an emaciated condition, the growth now being the size of an infant's head. Laparotomy was performed under local anæsthesia, and on opening the stomach an enormous tumour attached by a broad base to the fundus of the stomach was found and removed with some difficulty. Microscopical examination proved that the tumour was papilloma. It was remarkable that the symptoms caused were relatively slight. Papilloma of the stomach is extremely rare, only five cases have hitherto been described, and in none of them had the diagnosis been made previous to the operation. Some authors are of opinion that papilloma develops from gastric ulcer; such was not the case in this patient. The danger to the patient lies either in the growth by its size producing an obstruction of the pylorus, or in hæmorrhage, or in eventual carcinomatous degeneration. Removal of the growth is, of course, indicated in every case and must be a radical one to avoid relapse.

A Question of Medical Etiquette.

It is an old custom for medical men to refrain from charging fees for attendance on their professional brethren and their families. This was justified at a time when the number of medical men was so small that personal relations existed between them and the system worked on a satisfactory quid pro quo basis. Times have, however, changed; the large number of doctors, at least in great cities, has made this system impossible, especially as a great number of medical men in this country, probably more than abroad, are specialists, whose services the general practitioner can seldom repay in kind. The custom has therefore grown up of recent years for the professional patient to recognise his medical attendant, if not a personal friend, by some gift, monetary or otherwise. A remarkable law suit concerning that question has recently taken place before a court in a great city of Northern Germany. An ophthalmologist attended another medical man suffering from severe iritis. He saw the patient 20 times at the latter's home and about 300 times in his consulting-room. Owing to the great amount of trouble connected with the case he sent a bill for M.1700, a rather moderate charge. The medical patient declined to pay, not because the charge seemed to him too high but because he held that it was the time-honoured custom among medical men not to charge fees to each other. The court asked for the opinion of the Medical Chamber, and when the latter declared that it was indeed contrary to custom to charge fees to a professional brother the court found for the defendant. This decision led to a discussion in the medical press. It is alleged that the old custom can no longer be maintained as conditions have totally changed. Some specialists are indeed consulted by medical men and their families to such an extent that they have little time to devote to other patients. A well-known specialist for infants' diseases stated that about one-third of his clientèle belonged to the families of medical men; another reported that he had been called at night to a medical colleague residing in a remote suburb to perform an urgent operation and that the considerable expenses connected with that case had never been recovered. The opinion of the Medical Chamber is not in agreement with the present condition of the medical profession.

Public Health Services.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

THE following are some of the health statistics for the year 1924 of a group of local government districts of varying status:—

Name of district.	Mid-year population (R.-G.).	Birth-rate.	Death-rates per 1000 of the population.				Death-rates per 1000 births.		
			All causes.	Tuberculosis.	Cancer.	Resp. diseases with influenza.	Neonatal mortality.	Infant mortality.	Maternal mort. from childbirth.
Poole B.	45,150	18·0	11·6	1·04	1·1	1·9	40	66	6·1
Woking U.D. ..	26,110	11·6	9·1	0·61	1·1	1·3	—*	35	2·5
Guildford B. ..	25,720	15·3	12·3	0·97	1·0	2·3	—*	52	2·5
Guildford R.D. .	20,060	11·6	10·9	0·65	1·7	1·8	—*	32	6·3

B., Borough. U.D., Urban district. R.D., Rural district.
* Information not given in the report.

Borough of Poole.

Dr. R. J. Maule Horne reports that Poole is growing rapidly. Over 500 houses were built last year and the cleansing services have a difficulty in keeping pace with the growth, which tends to be uncontrolled. Thus, houses in some cases grow up along an old cart track. The number of cesspools cleared by the department has increased from 111 to 131. Dr. Horne strongly advises the establishment of a regional advisory planning committee, to include representatives of contiguous districts and private estates. He emphasises the climatic advantages due to the shelter of the Purbeck Hills and the equability induced by the extensive sheet of water in the harbour, whence freedom from the damp sea-mists of the coast-line is obtained. He has a note of warning to sound with regard to the destruction of the pines, which are Poole's chief pride. Unemployment has fallen from a monthly average of 938 in 1922 and 626 in 1923 to 366 in 1924. There is, however, a large amount of quayside unskilled labour. A free open-air tidal swimming-bath is well used during the summer months, and Dr. Horne urges the provision of up-to-date well-equipped salt water swimming-baths which would not be subject to seasonal closure. Some effort is made to control mosquitoes by spraying the breeding-places with paraffin. The public analyst reports that, of 11 samples of butter examined, nine contained boric acid and a high percentage of water. Dr. Horne shows that while infant mortality has been declining, there has also been concomitantly a great decrease in the deaths of children from 1 to 5 years of age. The supervision of boarded-out children has been handed over by the board of guardians to the Maternity and Child Welfare Department.

In the school report Dr. Horne points out that verminous conditions are much too prevalent. The dental surgeons inspected 3209 children and found that 2131 required treatment. Only 637 of these actually received treatment at the dental clinic. The total amount received in fees in reduction of the gross cost of the school medical service was £33 10*s.*, including £8 12*s.* for dental treatment. The scale of fees has now been in operation for a year, and experience has shown that the chief branch of the work of the clinic to suffer from the imposition of a charge has been the care of the teeth.

Woking Urban District.

Dr. R. W. C. Pierce says the low infant mortality-rate of the last two years speaks well for the work inaugurated by the Woking Health Society and now carried out by the council. The council pay the Health Society a yearly grant of £50 for nursing infectious diseases among children. The Woking Health Society also maintains an excellent maternity home, in which last year there were 86 confinements, while 11 miscarriages and two antenatal cases also received treatment. No necessitous cases are refused, and 12 of the patients admitted were paid for by the council. The small cottage hospital, provided by voluntary contributions, has proved quite inadequate and an extension, consisting of two six-bed wards, three single-bed wards, and additional staff accommodation, is in progress. The clean milk movement makes progress. All the dairy cows are examined quarterly by the veterinary inspector, Mr. A. C. Wild. One case of generalised tuberculosis and a "waster" were found among the cows inspected (averaging 438), and destroyed. Considerable trouble was experienced with tents and vans on the commons. In all 107 tents and vans were removed, and application has been made to the Ministry for powers to make by-laws.

Guildford Borough and Guildford Rural District.

Dr. Pierce is also medical officer of health of these two districts. Nine cases of encephalitis lethargica were notified in the borough, but three of them, one fatal, belonged to other districts and were notified from the County Hospital. The ages of the six borough cases varied from 10 to 43. The patients who recovered were aged 10, 10, and 18 respectively, and the patients who died were aged 36, 12, and 43. In the rural district four cases were notified, three of which died, aged 40, 59, and 1½ respectively. The fourth case, a woman of 48, recovered. There appeared to be no direct connexion between any of the cases, either in the borough or the rural district. The number of new houses erected in the borough was 242, with State assistance for 72 council houses and 98 privately erected; while in the rural district 169 houses were built, of which 36 council and 19 privately built received State assistance. The milk question is receiving attention, and the clean milk competition conducted by the Surrey County Council has been taken up by many of the dairymen in the rural district. A prosecution and conviction for black smoke from a brewery chimney in the borough led to an appeal, but the decision of the magistrates was upheld and the appeal dismissed.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED APRIL 25TH, 1925.

Notifications.—The following cases of infectious disease were notified during the week, namely:—Small-pox 170; scarlet fever, 1530; diphtheria, 779; enteric fever, 28; pneumonia, 1130; puerperal fever, 62; cerebro-spinal fever, 12; acute poliomyelitis, 5; acute polio-encephalitis 1; encephalitis lethargica, 54; dysentery, 11; ophthalmia neonatorum, 117. There were no cases of cholera, plague, or typhus fever notified during the week. The number of small-pox cases showed an increase of 35 over the number for the preceding week. One case was notified from the County of London (Bethnal Green); 55 from Derbyshire (Derby C.B., 41); 5 from Leicestershire (Leicester C.B.); 22 from Northumberland; 17 from Notts (Mansfield Woodhouse, 10); 7 from Warwickshire; 31 from Yorks, North Riding (Middlesbrough C.B.); Yorks, West Riding, 3 (Rotherham).

Deaths.—In the aggregate of great towns, including London, there were 4 deaths from enteric fever, 122 from measles, 7 from scarlet fever, 110 from whooping-cough, 40 from diphtheria, and 130 from influenza, as compared with 162, 221, 242, and 281 in the four preceding weeks. In London itself the deaths from influenza numbered 18, from whooping-cough 20, and from diphtheria 9.

SMALL-POX IN LONDON.

Up to May 6th, 6 cases of small-pox have been notified in London: 1 from Lambeth and 5 from Bethnal Green. The Bethnal Green cases all occurred in one family, of whom the 3 children were unvaccinated, the father and mother having been vaccinated in infancy. The Lambeth patient was unvaccinated. It is understood that all cases are of the prevalent mild type.

The Services.

ROYAL ARMY MEDICAL CORPS.

Col. F. Ashe (late R.A.M.C.) retires on ret. pay.

Lt.-Col. and Bt. Col. H. Ensor to be Col., vice Col. F. Ashe.

Lt.-Col. D. S. Skelton is secd. for serv. under the Colonial Office.

Maj. T. J. Hallinan retires, receiving a gratuity.

Maj. S. McK. Saunders retires on ret. pay.

Capt. W. H. Dye resigns his commn.

TERRITORIAL ARMY.

Maj. L. A. Harwood to be Lt.-Col. and to command 167th (City of London) Fld. Ambulance.

Capt. J. P. McGreehin (late R.A.M.C.) to be Capt.

Lt. D. F. Hocken relinquishes his commn.

ROYAL AIR FORCE.

Flight Lt. C. P. Barber is granted a permanent commission in the rank stated.

Flight Lt. D. J. Jones relinquishes his temporary commission on account of ill-health.

INDIAN MEDICAL SERVICE.

Capts. Sahib Singh Sokhey, A. Seddon, and R. V. Martin to be Majs.

Fakhar-ud-Din to be tempy. Lt.

Capt. Mahdo Prasad to be restored to the active list from the temp. non-effective list.

KING EDWARD VII.'S CONVALESCENT HOME FOR OFFICERS.

The King has approved the reappointment of the undermentioned to the Consulting Staff of King Edward VII.'s Convalescent Homes at Osborne, Isle of Wight, for Officers of H.M. Navy, Army, and Air Force: Sir C. Wallace, Sir H. Waterhouse, Mr. G. E. Gask, Sir W. H. Willcox, Dr. C. H. Miller, Dr. H. S. French, and Dr. H. M. Fletcher.

BELGIAN CONGRESS OF STOMATOLOGY.—To celebrate the twenty-fifth anniversary of the Société Belge de Stomatologie, an international congress will be held in Brussels from July 11th to 14th. Lectures and practical demonstrations will be given, and leading specialists will deal with such subjects as focal infection, pathology and treatment of cancer of the mouth, vitamins, and so forth. The membership fee is 50 francs, which entitles the member to a copy of the Proceedings of the congress. Further information may be obtained from the joint secretaries, Dr. René Boisson, 35, rue Belliard, and Dr. Polus, 18, rue du Commerce, Brussels.

Correspondence.

"Audi alteram partem."

THE BATEMAN FUND.

To the Editor of THE LANCET.

SIR,—Have the bowels of compassion of the medical profession been utterly and completely resected? Surely some unorthodox surgeon has been stalking about the land with a thousand sparkling scalpels shimmering around him? He seems to have alighted on about 99½ per cent. of the medical profession and to have removed therefrom the compassionate organs above mentioned!

So far as I can make out, the contributions to this fund for a professional brother in trouble amount to about the same as the single contribution of the proprietors of THE LANCET. And this from the whole of the medical profession of Britain!

Dr. Bateman—a complete stranger to me—was cleared of the charge against him by the courts. We all know—or should know—what he has had to go through. We also know—or should know—that any one of us at any moment may be at the mercy of an ignorant jury. And yet all we can find between us is £250!

I enclose another small contribution in the hope that it may stimulate others to help a colleague whose name a British court of justice has cleared.

I am, Sir, yours faithfully,

A. GRAHAM-STEWART.

Cliftonville, Margate, May 1st, 1925.

⁂ We trust that the merits of this case will commend themselves promptly to more of our readers. The proceedings in the Court of Criminal Appeal will be found substantially reported in THE LANCET, Feb. 14th, 1925. Remittances should be forwarded to the Manager of THE LANCET, 423, Strand, W.C. 2, and made payable to the "Bateman Fund Account."

THE TREATMENT OF NON-PIGMENTERS BY LIGHT.

To the Editor of THE LANCET.

SIR,—In the course of a paper on light treatment in surgical tuberculosis read before the Tuberculosis Society, at their meeting held here a short while ago, Sir Henry Gauvain stated that those children who easily become pigmented under the influence of sunlight usually do well, while those who do not so readily pigment derive less benefit from the treatment, and sometimes are unable to endure it. Now pigment in the skin probably acts as a light filter, cutting out certain rays and allowing others to pass through; and since the pigmenters do well in spite of pigmentation it would seem that the benefit is derived from rays which are not excluded by the pigment. The rays which are intercepted by the screen of pigment are probably those which cause local inflammation and even constitutional disturbance; the consequence being that the pigmenters are able to receive a large dose of the healing rays, while the non-pigmenters cannot do so because they are upset by the rays which cause inflammation. It therefore seems desirable to seek for a means of excluding the latter rays while allowing the others to act with full effect on the children whose skins do not pigment under the action of light.

Many years ago, when summers were sometimes really hot, I tried the experiment of exposing to the full force of the sun's rays the greater part of my arms during a boating holiday. Round one arm I had stained a broad band of skin a pale shade of brown. The result of several days' exposure was to produce a state of inflammation and œdema above and below the stained zone, but the zone itself remained normal.

The moderate degree of staining had therefore completely protected the skin from the inflammatory rays.

My object in writing this letter is to persuade those who are applying the light treatment to sufferers from tuberculosis to try on those persons who do not appear likely to pigment well the effect of lightly staining the skin before exposure to the rays. In my experiment, so well as I can remember after so long an interval of time, I employed strong coffee to stain my arm, but I would suggest as a convenient substitute a weak solution of permanganate of potash. The face, of course, need not be stained since it can be shaded, nor the hands, accustomed as they are already to exposure.

I am, Sir, yours faithfully,

Louis Cobbett.

Pathological Laboratory, University of Cambridge,
April 28th, 1925.

THE INFLUENCE OF TOBACCO.

To the Editor of The Lancet.

Sir,—There is some confusion between tobacco and tobacco smoke concerning the content of nicotine. Some writers deal with the former, others with the latter. Heinz[1] says that only about one-sixth of the tobacco content appears in the smoke, and the *smoke*, according to Cow,[2] contains 1·5 per cent. of nicotine. The quantity absorbed varies greatly with the extent to which the smoke is inhaled. In a recent issue of the *Presse Médicale*, dealing with tobacco as a cerebral poison, Binet[3] refers to three manifestations occurring in animals on the administration of nicotine: cerebral congestion, cellular lesions, and memory troubles, but we are told very little about the quantities necessary to produce these results. To be of any value in their applicability to man experiments of this sort should be performed with quantities of nicotine which are in some way equivalent to those in the blood of heavy smokers, weight for weight. Man uses tobacco chiefly for its effect on those faculties which animals do not possess, and he easily acquires tolerance, as pointed out by Cow.[4] This is probably an example of the Lamarckian principle of the inheritance of acquired characters. The amount of 1–2 mg. of nicotine per litre of blood is not an excessive estimate in the case of a heavy smoker, and the withdrawal of that component from the blood may lead to troublesome symptoms, causing depreciation in efficiency as the overdose does in the light smoker.

We see inveterate smokers on the golf links, ounce-a-day men some of them, who are perfectly fit and apparently insusceptible to fatigue from much physical work. Considerable reduction of their allowance of tobacco is frequently followed not merely by discomfort but by decline of form. That the work of skeletal muscle like that of the heart may be enhanced by nicotine is quite compatible with the results obtained by Langley[5] in this domain. A scratch player at golf of my acquaintance suddenly stopped smoking altogether—he had been accustomed to almost an ounce a day—and, to use his own expression, "went to pieces" as a result. A man like this probably has an ordinary blood content of nicotine of 1 or 2 mg. per litre. The experience of this player so far looks like an argument in favour of abundant tobacco for golfers; but he persevered with his abstention until his form returned, and he thought it was even slightly better than before. The margin of difference, however, from the nicotine standard was too slight to warrant continued privation. Others, who for some reason abruptly give up smoking, complain that their faculties of memory and judgment are for a while impaired, as is their skill in various performances.

The symptoms produced by an overdose in the light smoker, such as insomnia, fast pulse, throbbing at the temples, indicate cortical and bulbar effects. The cardio-inhibitor tone is depressed, as is that of the vaso-motor centre somewhat later. These effects, while notably transient, are undoubtedly greater and last longer in the case of one smoking in a crowded room or theatre than in the open air, and it is a matter of importance in determining the influence of tobacco to attend to the hygienic conditions in which it is used. The absorption of the accessory substances such as pyridine bases as well as of nicotine, is probably greater in a confined space than in the open, and their elimination, shown by Straub[6] to be a slow process in general, is possibly still further slowed by such conditions. The point is one calling for study.

One thing I can affirm with confidence, something which must have a bearing on the action of nicotine on any tissue, is the need of pretty large doses of the drug in perfusion experiments in order to produce appreciable results in disturbance of the heart's rhythm and work, in the toad and frog. Small doses as used by Clerc and Pezzi for the dog's heart may cause change of rate, and of electrocardiogram in the mammal; but it requires a concentration of about 0·2 per cent. or more to cause arrest of beat, dissociation, and reversal. Further, at a certain stage of the action of nicotine the muscular functions are enhanced[7] owing to a dual effect on muscle-fibre and augmentor nerves, so that the ventricular systole is able to overcome a greater resistance to output than previously, and the work done in a certain time is increased. Lastly, the heart recovers quite well from prolonged action of the alkaloid.

Proceeding to the central nervous system, one may expect to find there also a fair amount of resistance to the influence of nicotine in man as in animals. One part of the investigation of the problem in man might suitably consist of observation of the effects produced by increase, over short periods, of the usual quantity of tobacco for the light smoker and diminution for the heavy smoker. These are more susceptible to the influence of change in their respective directions than would be the moderate smoker in either direction. The symptoms of vertigo, nausea, depression, &c., produced in the non-smoker do not take one very far, any more than in the case of animals.

The physiological effects of tobacco, as our present knowledge reveals them, are not sufficiently deleterious to counter-balance the benign influence of the drug in other respects. It may be abused, of course, but so may food, and this latter form of abuse is, in my opinion, responsible for greater evils than those resulting from the abuse of tobacco.

I am, Sir, yours faithfully,

D. T. Barry, F.R.C.S. Eng., M.D.,

Physiology Department, University College, Cork.
April 25th, 1925.

CHARGES AGAINST PENSIONS OFFICIALS.

To the Editor of The Lancet.

Sir,—I notice in your issue of April 18th my name is mentioned by your Parliamentary correspondent in connexion with charges against pensions officials as being the hon. and gallant Member for Salford. I write to say that I had nothing whatever to do with these charges and that I have always been Member for the Salisbury Division of Wiltshire.

I am, Sir, yours faithfully,

Hugh Morrison.

9, Halkin-street, Belgrave-square, S.W. 1,
April 29th, 1925.

*** We greatly regret the inadvertence, which occurred obviously in transcribing the name from an alphabetical list of constituencies.—Ed. L.

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[1] Heinz: Quoted by Binet.

[2] Cow: Synopsis of Pharmacology, 1920, p. 93.

[3] Binet: Presse Médicale, 1925, No. 9, p. 131.

[4] Cow: Loc. cit.

[5] Langley: Jour. of Physiol., 1906, xxxiii., 374.

[6] Straub: Eleventh Inter. Physiol. Cong., Edinburgh, 1923.

[7] Barry: The Lancet, 1917, ii., 739; Arch. Int. de Pharmacodyn. et de Thér., 1920, xxv., 391; Communication to the Tenth International Physiological Congress, Paris, 1920.

PREMATURE SEPARATION OF THE PLACENTA.

To the Editor of THE LANCET.

SIR,—In your report last week of the proceedings of the recent British Congress of Obstetrics and Gynæcology much of necessity has been omitted, and it is not surprising my remarks on the premature separation of the placenta do not appear. But you found space for Prof. B. P. Watson's opinion "that the primary condition was hæmorrhage into the uterine wall, and the separation of the placenta was a mechanical result of that"—an opinion which Prof. Watson thought was accepted. As, however, I do not know that all obstetric teachers and thinkers are agreed on this point, and lest your readers should imagine they are, I venture to put before you some reason for the belief that the separation of the placenta is primary, and that the hæmorrhages into the uterine wall are secondary to the increased and rapidly occurring uterine distension. Above all else is this, that the pathological changes which the uterine wall undergoes in accidental hæmorrhage are peculiar to cases in which the bleeding is concealed. I believe I am right in stating that the necrosis of the uterine wall on which the late Mr. Gordon Ley laid such stress, and the hæmorrhages into its substance, only occur when the blood extravasated beneath the placenta is prevented from escaping from the uterus. However this retention be caused, it is clear that as a result of the bleeding the uterus becomes more and more distended until the bleeding is checked. In bad cases the uterine distension is so great that the peritoneum covering the uterus is split in many places, and the blood (escaping from the high pressure arterioles) ploughs a way through the musculature, even reaching the peritoneal sac or invading the connective tissue within the broad ligaments. That the intra-uterine pressure is greatly raised is clear not only from the pathological findings at operation or post mortem, but also by the clinical finding that if the membranes be ruptured a further great loss of blood occurs with rapid death of the patient (Gordon Ley).[1] But when the blood escapes from the uterus, when the accidental hæmorrhage is apparent, such a distension of the uterus does not occur, and the changes—the necrosis and the hæmorrhages—of the uterine wall are not found. I do not know of a single case in which such have been reported.

And were Prof. Watson correct in his opinion, I submit that pathological changes in the uterine wall—e.g., at Cæsarean section, and apart from concealed accidental hæmorrhage—should occasionally be found. But is not the case otherwise? Moreover, Prof. Watson should show us how the hæmorrhages —the small ones scattered throughout the uterine wall, as the beautiful lantern slide shown by Prof. Whitridge Williams displayed—are caused. To attribute them to a preceding toxæmia scarcely holds in those cases of concealed accidental hæmorrhage, which from time to time occur without any sign of such a toxæmia. That a toxæmia or an anuria should arise subsequently to concealed accidental hæmorrhage is explained (in my view) by the effect of the uterine distension on the intra-abdominal pressure, and so on the other maternal viscera. In such cases the uterus is mainly prevented from bursting by the increased tonicity of the muscular sheets forming the roof, walls, and floor of the abdomino-pelvic cavity. It is reasonable to believe a great rise of extra-uterine pressure within the abdomen occurs, and that this must affect the flow of blood through the visceral—e.g., renal—capillaries.

As to the cause of premature separation of the placenta, I believe trauma plays a greater part than is at present allowed. The question is, What do we mean by trauma? Are we to limit this to such accidents as falling downstairs or being kicked on the abdomen by a horse? Or may such acts as carrying in the breakfast things play a part? It is interesting to note that in some of the cases reported by Gordon Ley the disease began in the morning—at 9 or 10 o'clock. In other cases, the disease seems to have begun during the night. A question in my mind is how often coitus in the latter weeks of pregnancy may occasion this accident. The conception is supported by the occurrence of the disease in primigravidæ (that is, in women with young husbands); by the fact that coitus late in pregnancy is not uncommon; and by the superstition that coitus just before labour facilitates delivery.

I am, Sir, yours faithfully,

R. H. PARAMORE, F.R.C.S. Eng.

Rugby, May 4th, 1925.

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[1] Gordon Ley: Utero-placental (Accidental) Hæmorrhage: a Clinical Report of Fifty Consecutive Cases, Proc. Roy. Soc., Med., Obstet. and Gyn. Sec., 1920, vol. xiii., p. 169.

NURSING HOMES (REGISTRATION) BILL.

To the Editor of THE LANCET.

SIR,—You were good enough to allow me in your issue of April 25th to draw the attention of the profession to this Bill and its likely pernicious effect on all concerned in those instances where doctors received patients into their private houses. May I now draw attention to another aspect—that is, how it will affect the question of professional secrecy if the Bill goes through in its present form.

In accordance with Section 1 every nursing home will have to be registered or be closed down by June 1st next! If it is approved and registered then under Section 5 the Minister of Health will issue regulations prescribing the registers to be kept and the particulars as regards patients (names, addresses, accident or disease, treatment, result, &c.). Reports also will have to be made to the Ministry on these matters. Under Section 8 these registers and reports will be subjected to inspection and review by the medical officer of health or (and) a State-registered nurse appointed for the purpose. Under Section 9, if in order to protect professional secrecy the doctors refuse to keep these registers or to allow of this inspection and criticism, heavy fines can be inflicted on the proprietors, and if still recalcitrant the licence can be withdrawn and the home closed down.

At the present moment these homes are voluntary; the patients go there voluntarily; the doctors are voluntary and are paid by the patients. There is not a single vestige of State interference or supervision apparent. Everywhere, other than possibly in London, one hears that these homes are valued and those who conduct them are well known and respected by our profession. So-called homes die from want of material.

Is the profession willing—through apathy, indifference, or otherwise—to allow this Bill to go through without drastic amendment, with a further encroachment by the State on professional secrecy and professional liberty? If not, may one venture to urge every doctor interested—and there must be thousands—to immediately protest to their Member of Parliament, the B.M.A., in the press, and otherwise. The promoters desire the Government to take over this Bill and to make it a Government measure. There is no time to be lost.

I am, Sir, yours faithfully,

Hove, May 4th, 1925. E. ROWLAND FOTHERGILL.

"UNNECESSARY" OPERATIONS.

To the Editor of THE LANCET.

SIR,—In discussing Lord Riddell's paper, "The Legal Responsibility of the Surgeon,"[1] you referred to possible operations not necessary for conserving or improving the health of the persons seeking them, and to the "medical welfare" of the patient as the test by which the lawfulness or otherwise of a proposed operation must be determined. The question of what the medical welfare of the patient may require must be for the surgeon to answer according to the particular circumstances of the case, and the necessity need not be such that immediate surgical interference is "necessary" in the ordinary sense of the word. It is a question of an honest endeavour to act rightly in the true interest of the patient. Here, for example, is an instance where an operation is rightful without being necessary, and the situation must often have occurred. A man is about to go for an indefinite period to a country where he is uncertain about obtaining the best medical advice. He consults his doctor as to certain symptoms and is told of the possibility, rather than the probability, of impending appendicitis, whereupon he decides to have his appendix removed before leaving London, where he is familiar with and has confidence in the conditions of surgery and nursing. When these operations are performed there cannot be any sequel to prove that they were necessary lest worse should happen, but they are rightly undertaken in the interest of the patient's "medical welfare." A more difficult problem would be propounded by a patient who, having never suffered from anything indicative of appendicitis, but being about to go beyond the reach of surgical skill, should demand the operation as a precaution. Who would be prepared to say that such an operation ought to be refused as prejudicial to the public good and so contrary to public policy? Yet I think the intending patient would not readily find a surgeon to fall in with his wishes. If certain general principles are admitted as governing such cases, their application to concrete examples must be left to the conscience of professional advisers.

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[1] THE LANCET, April 25th, p. 899; May 2nd, p. 931

I am, Sir, yours faithfully,
F.R.C.S.

May 4th, 1925.

Medical News.

University of Cambridge.—At recent examinations the following candidates were successful:—

Diploma in Medical Radiology and Electrology.

Part I., Physics and Electrotechnics.—Elizabeth M. Bird, John F. Bromley, Edward H. P. Cave, Margaret R. Clark, Beatrice L. Collins, William C. Fothergill, Eric D. Gray, John L. A. Grout, Adangaprathoo O. Jacob, Pami H. Jhangiani, Montagu H. Jupe, Peter J. Kerley, Athanase Lambadarides, Colin F. Macdonald, Ethel M. Magill, Phani B. Mukerji, Iqbal S. Nalwa, John O'Sullivan, Keith A. Piper, Ernest J. H. Roth, Narendra S. Sodhi, Dulcie C. Staveley, Herbert M. Strickland, Cyril G. Whorlow, and Frederick E. Wynne.

Part II., Radiology and Electrology.—Edward H. P. Cave, Robert V. Clayton, William C. Fothergill, Adangaprathoo O. Jacob, Colin F. Macdonald, Cusack J. K. O'Malley, John O'Sullivan (distinction), Dulcie C. Staveley, Herbert M. Strickland, Richard S. Topham, and Cyril G. Whorlow.

Royal College of Physicians of London.—At a meeting of Comitia of the College on April 30th, Sir Humphry Rolleston, the President, in the chair, the following candidates, having passed the required examination, were admitted Members:—

Frederick M. B. Allen, Herbert A. Brookes, Morris J. Cohen, Leslie B. Cole, Robert H. Cooke, Macdonald Critchley, John N. Cruickshank, Charles F. Harris, Amy Hodgson, William A. Lister, Arthur S. MacNalty, David C. Muir, Robert Platt, Thomas D. Power, D'Arcy J. Prendergast, Jeffrey Ramsay, Chennagiri K. Rau, and Ambrose Spong.

The following Members were elected to the Fellowship:—

Robert Fortescue Fox, Athelstane Iliff Simey, Ivor Jones Davies, John Davis Barris, Henry Harold Scott, Joseph Godwin Greenfield, George Riddoch, Alfred Bertram Soltau, William John Adie, Frederick George Chandler, John William McNee, and Bernard John Hart.

Licences to practise were conferred upon 138 candidates, of whom 19 were women, who have passed the Final Examination of the Conjoint Board and have complied with the by-laws of the College. The following are the names and medical schools of the successful candidates:—

C. S. Anderson, St. Mary's; W. A. Barnes, Cambridge and St. Bart.'s; St. C. E. J. Barrett, Middlesex; J. C. P. Beauchamp, Cambridge and Guy's; J. R. Beagley, St. Bart.'s; Diana J. K. Beck, Royal Free; P. R. T. Becker, Cape and Guy's; Elizabeth E. Benson, Bristol; C. P. Blacker, Guy's; W. R. Bonner-Morgan, Cardiff and St. Bart.'s; E. H. Boodrie, Calcutta and St. Mary's; Duncan de C. Boxill, Long Island Coll. and St. Mary's; P. G. Brain, London; M. K. Braybrooke, St. George's; R. B. Brew, Univ. Coll.; C. W. Brook, Cambridge and St. Bart.'s; G. M. Brooks, Birmingham; M. F. Butler, Guy's; L. I. M. Castleden, St. Bart.'s; Enid A. Ceiriog-Cadle, Royal Free; M. Chandra, Punjab and St. George's; R. J. K. Chattey, Middlesex; J. E. Church, Cambridge and St. Bart.'s; Hilda A. Cohen, Cardiff; Jean Cooper, Punjab and Royal Free; Catherine A. Cowan, Royal Free; P. V. Crameri, Univ. Coll.; D. P. Crawford, St. Thomas's; D. A. L. Crawshaw, Guy's; Victoria M. Crosse, Royal Free; G. P. Crowden, Univ. Coll.; J. Crowther and J. Cumming, Manchester; R. N. Curnow, St. Bart.'s; R. R. Dalling, Liverpool; H. E. Daniel, Cardiff and St. Bart.'s; R. K. Debenham, Cambridge and London; A. E. De Chazal, Univ. Coll.; J. D. Dillon, St. Bart.'s; W. H. A. Dodd, Liverpool; A. S. M. Douglas, St. George's; J. L. C. Doyle, St. Bart.'s; G. I. Evans, Manchester; P. F. Evans, London, Christabel S. Eyre, Charing Cross; C. R. Fielding, Manchester; F. J. T. Foenander, Middlesex; C. A. Francis, Cambridge and St. Bart.'s; D. B. Fraser, St. Bart.'s; H. E. Gamlen, Durham; A. W. Gardner, St. Bart.'s; J. H. Gibbens, Cambridge and St. Thomas's; G. D. Gillbard, Middlesex; A. Gompertz, Durham; R. T. Goodyear, Cambridge and Liverpool; D. R. Grant, Alberta and Guy's; G. S. Hale, St. Bart.'s; S. Harris, Oxford and St. Thomas's; J. H. Hartland, Birmingham; F. C. Haward, St. Thomas's; Marjorie F. M. Hayward, London; H. L. Heath, Birmingham; Catherine M. Hext, London; H. F. Hiscocks, St. Bart.'s; F. D. M. Hocking, Middlesex; R. G. Hodder, St. Thomas's; H. B. Howell, St. Bart.'s; J. E. Howie, Liverpool; W. Hughes, Middlesex; J. T. Hunter, St. Bart.'s; J. S. Jacobsz, Cape and Guy's; Maurice E. M. Jago, Guy's; L. E. Jones, Cardiff and St. Thomas's; L. R. Jones, Guy's; W. H. M. Jones, Cardiff; B. Kaplansky, Cape and London; P. N. Kapur, *Lahore and London; R. St. J. Kemm, Bristol*; G. M. King, Cardiff and King's Coll.; J. G. Kingsbury, Guy's; C. K. Lakshmanan, Madras and St. Bart.'s; J. C. C. Langford, St. Bart.'s; Kathleen M. Lankester, Royal Free; G. A. Q. Lennane, Cambridge and St. Thomas's; H. M. O. Lester, St. Thomas's; Muriel A. Lester, Royal Free; T. J. Lloyd, Cardiff; A. McMillan, Birmingham; S. P. Meacock, Cardiff and Guy's; J. G. Milner, Cambridge and St. Bart.'s; V. S. Mitcheson, Cambridge and Birmingham; S. K. Montgomery, Univ. Coll.; A. J. Moody and C. A. Moody, St. Bart.'s; Florence I. R. Moore, Royal Free; W. G. R. Morris, Bristol; C. A. Mulligan, Manchester; Marjorie Murrell, Royal Free; W. Ogden, St. Bart.'s; J. B. Oldham, Liverpool; Dorothy M. Payton, Birmingham; A. P. Pearce, Leeds and London; C. O. Perera, Ceylon; A. Pierce, Birmingham; E. P. Pratt, Durham and St. George's; B. Press, St. Bart.'s; J. Rafalowsky, Zurich and Univ. Coll.; S. Randall, London; Grace D. Rice, St. Mary's; H. S. Rich, Sydney and Middlesex; G. D. Robb, Otago and Middlesex; J. E. C. Rouse, St. George's; A. T. F. Rowley, Bristol; T. A. Seekings, Univ. Coll.; R. Sellick, St. Thomas's; D. G. Shields and J. R. Smith, Cambridge and St. Bart.'s; J. S. Spickett, Cardiff and St. Bart.'s; A. A. Spiro, Manchester; E. F. Stead, London; G. H. Steele, Univ. Coll.; J. S. Symons, London; Catharine F. Taylor, Royal Free; G. Taylor, St. Mary's; Henrietta Trend, Royal Free; Joan W. Urwick, Charing Cross; K. H. Uttley, Cambridge and Univ. Coll.; J. M. van Schalkwyk, Cape and Guy's; Y. S. Wan, Cambridge and St. Bart.'s; E. C. Warner and R. L. Waterfield, Guy's; M. A. Weisman, Manchester; W. S. Whimster, Guy's; R. M. Windeyer, Cambridge and St. Bart.'s; K. K. Wood, Manchester; J. Wood, King's Coll.; H. M. Woodman, Cambridge and King's Coll.; and H. C. Wykerd, Cape and London.

Diplomas in Public Health were conferred, conjointly with the Royal College of Surgeons of England, upon the following candidates:—

J. V. Armstrong, A. Bajaj, Balmokand, E. M. Bergheim, E. R. W. Gilmore, Audrey M. Hughes, J. A. Kerr, J. H. M. Lloyd, Marian Lones, H. L. Oldershaw, Ethel B. Poole, G. Singh, L.-H. D. Thornton, J. G. Walker, and Moreen Whelton.

Diplomas in Tropical Medicine were also conferred upon the following candidates:—

Balmokand, J. N. Banks, A. Blair, J. H. Bowyer, H. H. Brown, E. N. Cook, A. C. Craighead, N. E. Goldsworthy, T. S. Goodwin, P. F. A. Grant, A. N. Haworth, L. H. Henderson, S. Khan, R. A. E. Klaber, K. Lumsden, J. R. Mahri, J. S. E. Manley, A. S. Mohammed, H. J. Moore, J. W. Scharff, E. B. Struthers, and J. L. Stuart.

Society of Apothecaries of London.—At examinations held recently the following candidates were successful in the undermentioned subjects:—

Surgery.—T. A. Lazaro, St. Bart.'s; I. H. Mackay, Sydney; K. E. R. Robertson, St. Mary's; F. Smith (Section I.), Manchester; and P. W. Tobin, St. Mary's.

Medicine.—E. H. Boodrie and F. Carroll, St. Mary's; T. G. L. Davies, St. George's; C. M. Moody and A. B. Osbourne, St. Mary's; and J. Wilson, Leeds.

Forensic Medicine.—F. Carroll, St. Mary's; P. H. Knowles, Bristol; C. H. Mason and A. B. Osbourne, St. Mary's; and O. W. Percival, Sydney and London.

Midwifery.—R. V. Cookes, B. Horwitz, and T. McD. Kellaugh, Guy's; P. H. Knowles, Bristol; C. S. Netscher, St. Mary's; W. Irving Pierce, Boston, U.S.A.; S. R. G. Plimm, Guy's; G. E. Rowan, St. Thomas's; B. L. Steele, Univ. Coll.; R. F. Stubbs, Manchester; P. W. Tobin, St. Mary's; and D. Winstanley, Liverpool.

The Diploma of the Society was granted to the following candidates entitling them to practise medicine, surgery, and midwifery: E. H. Boodrie, T. McD. Kellaugh, C. M. Moody, R. L. Steele, R. F. Stubbs, and J. Wilson.

Dr. J. D. C. White has been appointed Chairman of the Harrow Urban District Council.

University of London, University College.—Prof. Elliot Smith will deliver a lecture on the Taungs Skull: Missing Links, at University College, London, on Friday, May 22nd, at 5.30 P.M. The lecture will be illustrated by casts and lantern slides of various "missing links." The proceeds from the sale of tickets will be devoted to the St. Christopher's Working Boys' Club, 39, Fitzroy-square, W., which is largely maintained and organised by the students and staff of University College. A leaflet giving full particulars of the lecture and price of tickets can be obtained by sending a stamped addressed envelope to Miss Husbands, University College, Gower-street, London, W.C. 1.

Sierra Leone: Sir Alfred Lewis Jones Tropical Research Laboratory.—In the course of his visit to West Africa, H.R.H. the Prince of Wales, on April 7th, inspected this laboratory, which is a branch of the Liverpool School of Tropical Medicine, and was built after the war out of funds bequeathed by the founder of the School, Sir Alfred Jones. The Prince was received by the director, Prof. B. Blacklock, with Mrs. Blacklock, Dr. Gordon, assistant director, and Dr. Macdonald, research assistant, and showed great interest in work that is being done by the laboratory in the investigation of tropical diseases.

Royal Institution.—The annual meeting of the members was held on May 1st, Sir James Crichton-Browne, treasurer and vice-president, in the chair. The annual report of the Committee of Visitors for the year 1924, testifying to the continued prosperity and efficient management of the institution, was read and adopted. Seventy-eight new members were elected in 1924, and 63 lectures and 19 evening discourses were delivered. The books and pamphlets presented amounted to about 273 volumes, making with 678 volumes (including periodicals bound) purchased by the managers, a total of 951 volumes added to the library in the year. The following were unanimously elected as officers for the ensuing year: President: The Duke of Northumberland; Treasurer: Sir James Crichton-Browne; Secretary: Sir Arthur Keith; Managers: Sir Thomas Barlow, Sir John Biles, Sidney G. Brown, Ernest Clarke, Sir Dugald Clerk, Prof. J. A. Fleming, Earl Iveagh, Sir George Lawson Johnston, Sir Oliver Lodge, Charles H. Merz, Sir Ernest Moon, the Hon. Sir Charles Parsons, Sir Edward Pollock, Sir Robert Robertson, and Sir Almroth Wright; Visitors: K. A. Wolfe Barry, Alfred Carpmael, Edward Dent, William H. Eccles, Viscount Falmouth, Frederick H. Glew, W. E. Lawson-Johnston, Alexander G. Low, Ronald Malcolm, Clifford C. Paterson, Sir Walter Peacock, Herbert M. Phipson, Hugh Munro Ross, Frank Coston Taylor, and John Tennant.

Fellowship of Medicine and Post-Graduate Medical Association.—On Tuesday, May 12th, at 5.30 P.M., Mr. J. P. Lockhart-Mummery will lecture for the Fellowship of Medicine in the West Lecture Hall (1, Wimpole-street) on the Diagnosis and Treatment of Internal Piles.—From May 18th to May 29th, Saturday excepted, the London Temperance Hospital will hold a course for the convenience of those in general practice. A clinical demonstration illustrated by cases will be given at 4.30 P.M., lasting for one hour, followed by a short lecture at 5.30 P.M.—The month's course in Psychological Medicine at the Maudsley Hospital began on May 4th, and the demonstrations and lectures embrace all aspects of this particular subject.—The Central London Throat, Nose, and Ear Hospital will begin a three weeks' special course from May 11th to May 30th, consisting of clinical demonstrations with out-patient clinics and ward rounds dealing with cases peculiar to this hospital. An operative surgery class will also be arranged.—From May 18th to the end of the month will be given a special course in Diseases of Infants at the Infants Hospital, consisting of lectures, out-patients' clinics, "round table" consultations, and visits to four different centres away from the hospital.—There will also be a two weeks' course in Dermatology from May 18th at the Hospital for Diseases of the Skin, Blackfriars. Instruction will be given in the out-patient department from 2.30 P.M., with a special demonstration on selected cases on May 19th, together with venereal cliniques twice weekly.—The following courses will take place in June on Diseases of the Chest at the Victoria Park Hospital for Diseases of the Heart and Lungs: Gynæcology at the Chelsea Hospital for Women; Tropical Medicine at the London School of Hygiene and Tropical Medicine; Venereal Disease at the London Lock Hospital; and an intensive course at the London Temperance Hospital and associated hospitals.—Copies of each syllabus of the foregoing courses, together with the programme of work of the Fellowship of Medicine, may be obtained from the Secretary at 1, Wimpole-street, London, W. 1.

Manx Hospital Extension.—The Manx legislature have granted the Douglas Corporation permission to borrow £15,000 to build a new wing to the Mental Hospital.

Honour for Manchester Surgeon.—Dr. A. G. C. Magian, of Manchester, has received the Palmes d'Officier de l'Instruction Publique for his work in connexion with the Manchester French Hospital and the Entente League.

Medico-Psychological Association.—A quarterly meeting of the Medico-Psychological Association of Great Britain and Ireland will take place on Thursday, May 21st, at 11, Chandos-street, Cavendish-square, London, W., under the presidency of Dr. M. J. Nolan, at 2.30 P.M., when the Maudsley lecture, entitled "Mind and Brain," will be given by Dr. J. Shaw Bolton.

Queen's University (Belfast) Club, London.—The third annual dinner of this club will be held in the Connaught Rooms, Great Queen-street, London, W.C., on Thursday, May 21st, at 7.30 for 8 o'clock. Chairman, Major-General Sir Havelock Charles. Members who intend to be present or to introduce guests are requested to give notice to the hon. secretaries, 17, Wimpole-street, W. 1, not later than Monday, May 18th. The charge will be 12*s.* 6*d.* (exclusive of wines).

Medical Practice in Russia.—The Narkowsdrav (People's Commissariat of Public Health) states that doctors of medicine who have studied abroad and have obtained their diplomas abroad must pass a medical examination at one of the Russian universities in order to be entitled to practise medicine in U.S.S.R. Applications must be sent in to the Narkowsdrav.

Canadian Honour to a Medical Man.—Convocation of McGill University, Montreal, resolved on May 19th to confer the degree of LL.D. on, amongst others, Dr. David McKay Cassidy, medical superintendent of the County Asylum, Lancaster. Dr. Cassidy graduated M.D. and C.M. at McGill in 1866, became L.R.C.S. Edin. in 1867 and F.R.C.S. in 1875, B.Sc. Edin. in 1882 and D.Sc. in Public Health in 1884.

The late Dr. William Wallers.—William Wallers, M.R.C.S. Eng., one of the oldest and one of the busiest practitioners in Blackburn, died on April 20th in his sixty-eighth year. A student in the late seventies at what was then the Royal School of Medicine, Manchester—later Owens College Medical School—he qualified M.R.C.S. in 1881, became an assistant house surgeon at Stockport Infirmary, a house surgeon at Manchester Royal Infirmary, and then for three years house surgeon at the Blackburn and East Lancashire Infirmary. Thereafter, 40 years ago he settled in Blackburn, where he was in active practice until overtaken by a severe illness some months back.

Royal Commission on National Health Insurance.—The twenty-sixth meeting of this Commission was held at the Home Office, Whitehall, on April 30th, Sir Andrew Duncan in the chair. Evidence was given on behalf of the British Medical Association by Dr. R. A. Bolam, chairman of the Council, Dr. H. B. Brackenbury, chairman of the Representative Body, Dr. H. Guy Dain, chairman of the Insurance Acts Committee, Dr. Alfred Cox, medical secretary, and Dr. H. J. Cardale, chairman of the London Panel Committee. The following subjects were dealt with: The quality of the medical service given under the panel system, the conditions to be satisfied by a public service under the Health Insurance Scheme, the range of persons to be included within the scheme, extension of scope of medical service, coördination of existing services, the arguments against a salaried medical service.

Manchester Hospital Saturday Fund.—At the eighteenth annual meeting held in Manchester on April 24th it was stated that greater progress had been made during the last year than in the preceding one. The weekly contributions from workpeople amounted to £22,442, as compared with £18,377 in 1923, a matter of congratulation, as trade was still far from normal. The Workpeoples' Convalescent Homes were established in 1907 and from that time to the end of last year the admissions of men and women numbered 20,578. Regular contributors of one penny a week were entitled to a fortnight's stay at the homes to re-establish their health after illness or accident. During the last two years the contributions to the Saturday Fund have increased by almost 100 per cent. Of the £22,000 contributed in pennies £11,841 would be given to the hospitals, as against £9401 in 1923 and £5500 in 1922. Since 1907 the total contributed to the hospitals was £98,000. Out of every penny subscribed more than a halfpenny went to the hospitals, and the balance to the Convalescent Homes Fund. Out of every £1000 the sum of £850 went to the hospitals and £150 to the Convalescent Homes Fund.

Sir Humphry Rolleston, Regius Professor of Physic at the University of Cambridge, has been elected to a Fellowship at St. John's College, Cambridge.

HOVE HOSPITAL.—A public meeting on May 1st, presided over by the mayor (Alderman W. Jago), passed a resolution of thanks to Mr. Bernhard Baron for his generous offer to build and furnish at a cost of £7000 a new wing to this institution; and another resolution appealing to the townspeople to provide the necessary funds for the maintenance of the enlarged building.

CHADWICK PUBLIC LECTURES.—Two lectures, illustrated with epidiascope and lantern slides, will be given by Prof. Emile Brumpt, of the University of Paris, at 5.15 P.M., on May 25th and 29th. The first lecture on How to Conduct an Anti-Malarial Campaign will be delivered in the Barnes Hall, Royal Society of Medicine, 1, Wimpole-street, London, W., Sir William Collins presiding, and will be preceded (at 5 P.M.) by the presentation of the Chadwick gold medal and Royal Air Force prize of £100 to Wing-Commander Harold E. Whittingham, M.B. This award is made upon the nomination of Air-Commodore David Munro, Director of Medical Services, Royal Air Force, who will be present. The second lecture, entitled the Prophylaxis of Sleeping Sickness, will be delivered in the Lecture Room, Royal Society of Arts, John-street, Adelphi, London, W.C., Sir James Crichton-Browne, F.R.S., presiding.

ROYAL COMMISSION ON LUNACY: EVIDENCE OF THE MEDICO-PSYCHOLOGICAL ASSOCIATION.—At the sitting of the Commission on May 4th, a memorandum was submitted by the Medico-Psychological Association of Great Britain and Ireland embodying the views of the Association and containing the following recommendations:—

That "clinics for mental disorders," preferably in connexion with the universities, medical schools, and general hospitals, should be established.

That the reception into mental institutions of patients, whether of the private (hereinafterwards called "paying patients") or of the pauper (hereinafterwards called "rate-aided patients") class, should follow a similar procedure.

That a considerable proportion of admissions to mental institutions should be dealt with on a voluntary basis, so that such voluntary treatment should be extended to the rate-aided class, for which legislative sanction has already established precedents at the Maudsley Hospital and at the City of London Mental Hospital.

That special legal machinery should be devised for treating early non-volitional cases.

That a "provisional order" should be instituted as an intermediary measure before the usual "judicial order" for detention is enforced.

That when such detention is necessary for the cure or care of patients, medical certification should take place as constituting evidence, but that the authority for detention, discharge, and continuation, i.e., renewal, of orders should entail the responsibility of some authorised person not acting in a medical capacity.

That a broader conception should be taken of the functions of both the central and local authorities for "lunacy" or mental health administration.

That the Poor Law authorities should be superseded by the local authorities in regard to the care, treatment, and maintenance of necessitous patients suffering from mental disorders.

The Chairman of the Commission, Mr. H. P. Macmillan, said that they were convinced of the desirability of establishing mental clinics associated with, but separated from, the general hospital, and of treating patients at these clinics without certification. The immediate difficulty was to evolve machinery to carry out this recommendation. An interesting discussion followed on the possibility of voluntary detention.

ROYAL MEDICAL BENEVOLENT FUND.—At the last meeting of the Committee 32 cases were considered and £476 voted to 30 applicants. The following is a summary of some of the cases relieved:—

Widow, aged 72, of L.R.C.P. Edin. who practised in the Isle of Man and died in 1912. Applicant has supported herself, and her daughter up to the time of her marriage, by taking posts as housekeeper. She has just had to give up her last post owing to sudden collapse due to influenza and double pneumonia. Friends have managed to keep her in a nursing home, but the applicant is now back again in her modest lodging and not fully recovered her strength. Her only income is a life interest bringing her in £30 per annum and the post given up was at the rate of £50 per annum. Rent 13s. 6d. a week. Voted £18 in 12 monthly instalments.

Widow, aged 62, of L.S.A. who practised in Cambridgeshire and died in 1923. Applicant has taken a house so as to be able to let rooms and provide for herself and two daughters living at home. Applicant's total income is the rent from a house amounting to £55 per annum, and a daughter, who is a nursery governess, pays the applicant 10s. a week. Rates £20 per annum. Applicant asks for a grant towards 50 guineas per annum for a son, who has been in an institution for mental defectives for seven years. Voted £20 in two instalments.

Widow, aged 47, of M.B. Camb. who practised in Worcestershire and died in 1922. Applicant is left with five children, ages 9 to 17. The three eldest are at boarding school and provided for by friends; the two youngest are with applicant having lessons at home. Applicant lives in her own house and the rates amount to £20 per annum. She has an income of £250 per annum, an allowance from the grandmother of £100. Applicant asks the Fund to help her with votes for Epsom for her youngest boy Geoffrey, aged 9. Committee promised to help in getting votes for the youngest son.

L.R.C.P. & S.I., 1879, aged 74, who practised in London. He gave up practising owing to his wife's ill-health and travelled abroad on his wife's account. She died in 1899. Since then applicant has taken locums and during the war was on sea transport. Received £52 10s. from locums during the last 12 months. Room, breakfast, and supper amounts to £1 a week. Owing to influenza and phlebitis has not been able to pay his landlady, to whom he owes £28. Voted £30.

Wife, aged 40, of L.R.C.P. & S. Edin. who is now in a sanatorium at 4 guineas a week, which is paid by his brother. Applicant wishes to take a house so that her husband can have the benefit of good air after he leaves the sanatorium in a month's time. Local medical practitioners paid the applicant £3 while carrying on her husband's practice. She received £16 from a whist drive, and the only money in hand is £100, which the applicant wishes to reserve towards the house mentioned above. The two eldest children are at the National Children's Home and Orphanage, the two youngest, aged 3½ and 1 year, are with the applicant. Voted £10.

Daughter, aged 56, of M.R.C.S. Eng. who practised in Middlesex and died in 1911. Applicant has rheumatoid arthritis and is in general ill-health. She has not had any special training for business or a profession and is only able to do plain needlework, which brought her in £12. She has £14 per annum from war loan and £5 from the National Benevolent Institution. Rent 3s. a week. Our local secretary for Devon says: "With some money a better room could be got for her than the miserable one she now occupies." Voted £26 in 12 monthly instalments.

Widow, aged 49, of L.R.C.P. Edin. who practised in Lancashire and died in October, 1924. Applicant is left with three children, ages 19, 12, 10, and only £10 per annum from some railway shares. Rent £1 a week for two rooms. The eldest son is a farm pupil and only receives pocket money; the other children are at school. Applicant wishes to sell out her capital and start a business and asks the Fund to help her with the education of her two youngest children until she is established. Voted small grant and referred to the Guild.

Subscriptions may be sent to the Hon. Treasurer, Sir Charters Symonds, at 11, Chandos-street, Cavendish-square, London, W. 1.

Parliamentary Intelligence.

HOUSE OF COMMONS.

WEDNESDAY, APRIL 29TH.

Dried Milk and Infantile Death-rate.

Mr. GROVES asked the Minister of Health whether his attention had been called to the continued reduction in the infantile death-rate within the county borough of West Ham; whether he was aware that these reductions were side by side with the increased supply of dried milk and the general development of the health services of the borough; and whether his department proposed to make any recommendation to the local authorities of the country respecting the use of dried milk in preference to liquid milk.—Sir KINGSLEY WOOD replied: The answer to the first part of the question is in the affirmative. As regards the second part, I may point out that the reduction in recent years in the infantile death-rate in West Ham is comparable with the reduction which has occurred in other similar areas, and my right hon. friend is advised that it cannot be attributed exclusively to any particular measures which have been adopted in this area. The answer to the third part is in the negative. The question of the supply of dried or liquid milk is a matter primarily for the decision of the local authorities, regard being paid to all the relevant circumstances of their districts.

THURSDAY, APRIL 30TH.

Bengal Criminal Law Amendment Act.

Mr. THURTLE asked the Under Secretary of State for India whether it was the intention of the Government now to repeal Bengal Regulation III. of 1818, in view of the fact that the Bengal Criminal Law Amendment Act, 1925, was now part of the criminal law of India.—Earl WINTERTON said: The reply is in the negative.

Government and Opium Agreements.

Sir WALTER DE FRECE asked the Prime Minister whether it was the intention of Great Britain to ratify the protocol reached at the recent Opium Conference at Geneva; and whether he proposed to lay the document before Parliament.—Sir W. JOYNSON-HICKS replied: As has been stated in reply to a previous question by Lady Astor on March 24th, it is the intention of the Government as at present advised to ratify the agreements reached at the recent conference. I doubt whether it is necessary to incur the expense of printing the documents as a Parliamentary paper at this stage, as they will doubtless be published very shortly by the League of Nations office.

Mr. Forrest asked the Prime Minister whether, in view of the fact that the central board to be established under the last Anti-Opium Conference at Geneva was not likely to come into operation for some time, he would state whether the advisory committee on opium traffic was still in existence; whether it would hold its annual meeting this year, and, if so, when; and what was to be the policy of the British Government in respect of it.—Mr. Locker-Lampson replied: The advisory committee whose function is to assist and advise the Council of the League in dealing with any question that may arise in connexion with the League's supervision of the drug traffic, and to promote the fullest possible international coöperation in regard to the matter, is still in existence and will, so far as I am aware, continue to exist. I understand a meeting of the committee will be held as usual this year, some time before the meeting of the assembly in September, but the Government has not yet been informed of the date. I am not in a position to make any statement of policy, as the agenda for the meeting has not yet been settled.

Supply of Insulin by Poor-law Authorities.

Colonel Day asked the Minister of Health if, in view of the reduction in the price of insulin, he could now say whether it was supplied free by all Poor-law authorities on the recommendation of their medical officers.—Mr. N. Chamberlain replied: I have no reason to suppose that Poor-law authorities are not supplying insulin in all proper cases in which application is made to them and supported by their medical officers.

Royal Commission on National Insurance.

Mr. Oakley asked the Minister of Health, in connexion with the Royal Commission on National Health Insurance, if he could give an approximate date when the report of the Commission would be presented to Parliament.—Mr. Locker-Lampson (Under Secretary for the Home Office) replied: I understand that satisfactory progress is being made with the hearing of evidence by the Royal Commission on National Health Insurance, but I am not in a position to say when their report may be expected.

Education of Defective Children.

Mr. Harris asked the President of the Board of Education if he would state the number of urban and rural local education authorities in which no provision existed for the education of defective children.—Lord E. Percy replied: No certified special schools for defective children of any type exist in the areas of 27 county authorities and 102 non-county authorities. I would, however, remind the hon. Member that the majority of local authorities in whose areas no special schools exist make arrangements for the attendance of defective children at special schools in other areas.

Delays in Medical Board Decisions.

Captain Bowyer asked the Minister of Pensions whether he was aware that in some cases there was undue delay in notifying results of medical boards; and would he take steps to remedy this.—Major G. C. Tryon replied: Under the instructions of the Ministry the decision upon a case following a medical examination is conveyed to the claimant as promptly as possible. In a very few cases, as my hon. and gallant friend will understand, expert opinion or additional evidence may have to be obtained, and some unavoidable delay may occur. I have, however, recently taken active steps to secure that the speediest decision possible is arrived at on all outstanding cases.

MONDAY, MAY 4TH.

Post-mortems in Criminal Cases.

Mr. A. R. Kennedy asked the Home Secretary whether he was aware of the disadvantage which might attach to a person accused of murder, or manslaughter, in the conduct of his defence arising from the practice of appointing one medical man only to conduct a post-mortem examination; and whether he would take the necessary steps to ensure that, where a person had died in circumstances which might lead to a criminal charge being made against another in connexion with the death and a post-mortem examination was held, a duly qualified medical practitioner should be appointed to watch the examination in the interests of the person, if any, thereafter to be charged.—Mr. Locker-Lampson replied: My right hon. friend does not see his way to propose legislation for this purpose. A post-mortem examination is not a matter of advocacy, but of scientific investigation. The Director of Public Prosecutions is, however, considering whether it may not be possible to arrange that the defence shall have the opportunity of appointing a medical man to be present on behalf of the defendant when the post-mortem examination is performed.

The Lee Commission Report.

Mr. Lansbury asked the Under Secretary of State for India whether the Government had given instructions that the terms of the recommendations of the Lee Commission Report were to be extended to European members of the superior central services recruited in India and who had an Asiatic domicile.—Earl Winterton replied: I would refer the hon. Member to Statutory Rules and Orders No. 1305 of 1924. The pay and passage recommendations of the Lee Commission Report have been extended to members of the 15 central services which it has been decided to regard as superior in precisely the same way as they have been given to members of the All India Services (other than the Indian Civil Service); that is to say, eligibility for these concessions depends upon an officer having a non-Asiatic domicile. The pension concessions have also been given to the 13 of these 15 services which are pensionable on a rupee basis and for these an officer of Asiatic domicile is eligible.

TUESDAY, MAY 5TH.

Maternity and Child Welfare Services.

Mr. Lansbury asked the Minister of Health the amount of public money spent by local authorities during the years ending March, 1913, and March, 1925, on child welfare clinics and other centres, and the amount spent on the supply of milk to nursing and expectant mothers during the same period, showing the amount raised from the rates and the amount paid from the national Exchequer.—Sir Kingsley Wood replied: No figures are available as regards maternity and child welfare services in respect of the year ended March, 1913, the year ended March 31st, 1915, being the first year in respect of which Exchequer grant was paid on these services. The total net expenditure of local authorities in England and Wales on all maternity and child welfare services in that year was (approximately) £66,700, and of voluntary agencies receiving Exchequer grant (approximately) £16,200. No separate figures as to the expenditure of local authorities on maternity and child welfare centres and clinics, or on the supply of milk to nursing and expectant mothers and children, are available prior to the year ended March, 1920. For that year the net expenditure was as follows: Maternity and child welfare centres and clinics, £132,370 (exclusive of the cost of medical supervision and services of health visitors, which cannot be given separately in respect of this item). Supply of milk and food to nursing and expectant mothers and children, £163,618. The net expenditure on centres and clinics provided by voluntary agencies receiving Exchequer grant in that year was approximately £102,000. Particulars of the actual expenditure on these services for the year ended March, 1925, are not yet available, but the net expenditure for the year ended March, 1924, was as follows: Maternity and child welfare centres and clinics, £134,340 (exclusive of medical supervision and health visitors' services). Supply of milk and food to nursing and expectant mothers and children, £200,100. Centres and clinics provided by voluntary agencies receiving Exchequer grant (approximately), £105,100. One half of the expenditure referred to above was met by way of Exchequer grant, and one-half of the net expenditure of local authorities was met out of the rates.

Recent Increase in Small-pox Cases.

Sir William Davison asked the Minister of Health whether his attention had been called to the recent increase in cases of small-pox throughout the country; what was the total number of cases which had been notified during the past three months; and whether he had received any report as to the causes which had brought about the recent increase in such cases.—Sir Kingsley Wood (Parliamentary Secretary to the Ministry of Health) replied: The answer to the first part of the question is in the affirmative. The total number of cases of small-pox notified in England and Wales during the 12 weeks from Jan. 4th to March 28th was 1669. My right hon. friend has received numerous reports made by medical officers of his department who have visited the districts in which small-pox is prevalent, and is advised that the recent increase in the number of cases may be attributed to the neglect of vaccination in many of the invaded districts, and to neglect of the precautions which are essential if the spread of the disease is to be checked. My right hon. friend may perhaps take this opportunity of informing the House and the country that he is advised that there is no doubt that the disease now so prevalent in certain districts is true small-pox, though happily mild in degree, and that vaccination is the only reliable protection against it.

Sir W. Davison: Is it a fact that the late Minister of Health made an Order making it easier for people to obtain exemption from vaccination?

Dr. Watts asked if the hon. gentleman was aware that each of these cases cost the local authority £250 for treatment, isolation, disinfection, and so forth, and if his attention had been drawn to the report of a medical officer of health which proved distinctly that in his area the money they had to spend on these cases could have built 1000 or 1500 houses?

Mr. N. MACLEAN asked if the Government would issue orders to the local authorities to extend the building of houses and the clearing of sites, and to take steps to eliminate this disease by means of fresh air and pure food, and not by vaccination?

No answers were given.

Sir VICTOR WARRENDER asked the Minister of Health if his attention had been drawn to the increase of small-pox in certain areas; and whether the incidence of the disease had been increased since the coming into effect of the present regulations affecting exemption from vaccination.—Sir KINGSLEY WOOD replied: The answer to the first part of the question is in the affirmative. As regards the second part, it is presumed that my hon. friend is referring to the Order issued by the late Minister of Health which had the effect of reversing an Order issued by my right hon. friend on July 20th, 1923, and of reinserting the form of statutory declaration of conscientious objection in the notice of the requirement of vaccination handed to the parent or guardian when the birth of a child is registered. The Order of the late Minister came into force on Oct. 1st last, and my right hon. friend is carefully watching its effect, but there is not yet sufficient evidence to enable him to form a final opinion.

Dr. WATTS: How does the hon. gentleman explain the fact that, despite the number of cases of small-pox, proceedings are rarely, if ever, instituted under the present Vaccination Act?

Sir KINGSLEY WOOD asked for notice of the question.

Lieut.-Colonel FREMANTLE: Are the Government considering the transference of these powers from the boards of guardians to the sanitary authorities, so that they may be worked out in common with the general upkeep of the public health?

No reply was given.

School Children and Infectious Disease.

Colonel DAY asked the Minister of Health if he would consider the introduction of legislation to prevent persons in control of children, as, for example, headmasters and managers of schools, from permitting them when in an infectious condition to enter public vehicles or go into public places at the risk of spreading infection.—Sir KINGSLEY WOOD replied: Provision is already made in Section 126 of the Public Health Act, 1875, for preventing the exposure, without proper precautions, in public places and public conveyances of children suffering from any dangerous infectious disorder. Similar provisions as regards London are contained in Sections 68 and 70 of the Public Health (London) Act, 1891, and there are numerous supplementary provisions on this subject contained in local Acts. The question of introducing further legislation dealing generally with the matter will be considered in connexion with the proposed amendment of the Public Health Acts.

DONATIONS AND BEQUESTS.—By the will of the late Mr. Thomas Hamer, J.P., of The Banks, Upper George-street, Tyldesley, Lancs, the testator left, among other bequests, £1000 to the Manchester Royal Infirmary; £500 each to the Manchester Royal Eye Hospital, Henshaw's Blind Asylum, Manchester, the Southport Convalescent Hospital, the Leigh Infirmary, the Wigan Infirmary, the Bolton Infirmary, the Devonshire Hospital, Buxton, Derbyshire, Dr. Barnardo's Homes, and the National Society for the Prevention of Cruelty to Children; and £250 each to the Royal Society for the Prevention of Cruelty to Animals, the Royal Manchester Children's Hospital, Pendlebury, and the Manchester and Salford Deaf and Dumb Benevolent Association.—Mrs. Mary Eliza Culme-Seymour, of Knightsbridge, S.W., bequeathed £1000 to the Westminster Hospital for a bed to be called the "Robert George Clutton" bed.—Mr. James David Williams, of Styal, Cheshire, a Manchester merchant and shipper, left 100 fully-paid preference shares in the Manchester Ship Canal Company each to the Manchester Royal Infirmary, the Ancoats Hospital and Ardwick and Ancoats Dispensary to endow a J. D. Williams bed, the St. Mary's Hospitals, Manchester, to endow a J. D. Williams bed; 50 such shares to the Crippled Children's Home, Marple, for a J. D. Williams cot; and 50 such shares to Manchester and Salford Boys' and Girls' Refuges and Homes and Children's Aid Society.—The Salford Royal Hospital has received a grant of £1500 and the Salford District Nurses' Home £100 and other hospitals £1310 from the Booth Charities.—Of the total annual receipts of the Samaritan Hospital for Women—viz., £2932—the patients themselves contributed £581.—The Christie Hospital, Manchester, has received £2500 from the executors of the late Mr. Edwin Kershaw, of Bolton.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY, Burlington House, W.

THURSDAY, May 14th.—4.30 P.M. *Papers to be read:* Prof. E. C. C. Baly and Elizabeth Semmens: The Selective Photochemical Action of Polarised Light: I. The Hydrolysis of Starch. R. B. Thomson and H. B. Sifton: Resin Canals in the Spruce (Picea). An Anatomical and Œcological Study and its Bearings on Phylogeny. (Communicated by Dr. D. H. Scott.) H. G. Cannon: On the Segmental Excretory Organs of Certain Freshwater Ostracods. (Communicated by Prof. E. W. MacBride.) E. G. T. Liddell and J. F. Fulton: Observations on Ipsilateral Contraction and "Inhibitory" Rhythm. (Communicated by Sir Charles Sherrington, P.R.S.) K. Furusawa: Muscular Exercise, Lactic Acid, and the Supply and Utilisation of Oxygen. Part X. The Oxygen Intake during Exercise while Breathing Mixtures Rich in Oxygen. (Communicated by Prof. A. V. Hill.)—*Papers to be read in title only:* J. S. Yeates: The Nucleolus of Tmesipteris Tannensis Bernh. (Communicated by Dr. L. Cockayne.)

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Wednesday, May 13th.

SUBSECTION OF PROCTOLOGY (Section of Surgery): at 5 P.M.
Annual General Meeting:
Election of Officers and Council.
Discussion on
The Value or Otherwise of X Rays in the Diagnosis of Diseases of the Colon.
Openers:
Dr. Gilbert Scott and Mr. Hamilton Drummond.
Other Speakers:
Dr. W. H. Coldwell, Sir Charles Gordon-Watson, Dr. Arthur Hurst, Mr. J. P. Lockhart-Mummery, Dr. Bertram Shires, Dr. Ulysses Williams, and others.
Annual Dinner:
The Annual Dinner will be held at Oddenino's Restaurant, 60, Regent-street, W., at 8.15 for 8.30 P.M. Price 12*s.* 6*d.*

Thursday, May 14th.

NEUROLOGY: at 5 P.M.
Annual General Meeting:
Election of Officers and Council.
At this meeting pathological specimens illustrating diseases of the nervous system will be shown, and those who wish to show specimens should communicate with the Hon. Secretaries at an early date so that accommodation may be made for their exhibits.
Dinner:
The Meeting will be followed by a Dinner at 7.45 P.M. at the Langham Hotel. Price 12*s.* 6*d.*

PSYCHIATRY: at 5.30 P.M.
Annual General Meeting:
Election of Officers and Council.
N.B.—Please note change of date and time.

TROPICAL DISEASES AND PARASITOLOGY: at 5.30 P.M.
Annual General Meeting:
(1) Election of Officers and Council.
(2) Other Sectional business.
N.B.—No papers will be read and no demonstrations will be given.

Friday, May 15th.

ELECTRO-THERAPEUTICS: at 5 P.M.
Annual General Meeting:
Election of Officers and Council.
The Discussion on High Voltage and Radio-Therapy, adjourned from the March Meeting, will then take place, in which Dr. Finzi and others will take part.
Annual Dinner:
The Annual Dinner will be held the same evening at the Langham Hotel, at 7.30 for 7.45 P.M. Price 10*s.* 6*d.*

ROYAL INSTITUTION, 21, Albemarle-street, W.

MONDAY, May 11th.—5.15 P.M., Prof. J. Barcroft: Effects of Climate on the Circulation (IV.).

FRIDAY.—9 P.M., Prof. C. G. Darwin: Recent Developments in Magnetism.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.

MONDAY, May 11th.—8 P.M., Annual General Meeting. 9 P.M., Sir William Hale-White: Annual Oration: The Medical Career of John Keats. To be followed by a Conversazione.

HARVEIAN SOCIETY OF LONDON.

THURSDAY, May 14th.—4 P.M. (at the Paddington Infirmary, 235, Harrow-road, W.), Clinical Meeting.

BIOCHEMICAL SOCIETY.

Monday, May 11th.—(At the Middlesex Hospital, W.). 5 P.M. *Communications:* S. L. Baker: Intrarenal Obstruction Caused by the Products of Hæmolysis. R. W. Scarff: Experimental Atheroma in Rabbits Produced by Cholesterol Feeding. O. Rosenheim and J. C. Drummond: A Delicate Colour Reaction for the Presence of Vitamin A. E. H. Lepper and C. J. Martin: The Influence of Salt Concentrations on the C_H of Buffer Solutions as indicated by the Electrometric and Colorimetric Methods Respectively. H. W. Kinnersley and R. A. Peters: Anti-neuritic Yeast Concentrates. L. Gross and P. Eggleton: A Note on Blood-Sugar Levels in Rats Fed on Complete Diets and Diets Deficient in Vitamin B. T. A. Henry, T. M. Sharp, and H. C. Brown: Bactericidal Action of Some Organic Compounds of Mercury. F. Dickens, E. C. Dodds, and S. Wright: Observations upon the Preparation, Properties, and Standardisation of the Ovarian Hormone.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

Monday, May 11th, to Saturday, May 16th.—West Lecture Hall, 1, Wimpole-street. Lecture arranged by the Fellowship of Medicine and open to all members of the medical profession. At 5.30 P.M., Mr. J. P. Lockhart-Mummery: The Diagnosis and Treatment of Internal Piles.—Central London Throat, Nose, and Ear Hospital, Gray's Inn-road, W.C. Special Course in Laryngology, Rhinology, and Otology. Clinical Course daily, morning and afternoon sessions. Operative Surgery Class every morning. These Courses may be taken separately, or combined.—Maudsley Hospital, Denmark-hill, S.E. Course in Psychological Medicine. Lectures on the Psychoneuroses, the Practical Aspect of Mental Deficiency, the Pathology of Mental Diseases, and Demonstrations in Clinical Psychiatry and Clinical Neurology.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.

Monday, May 11th.—12 noon, Mr. Simmonds: Applied Anatomy. 2 P.M., Mr. Addison: Surgical Wards. 4.15 P.M., Staff Consultation on Cases of Interest.

Tuesday.—11 A.M., Mr. Endean: Venereal Diseases. 12 noon, Dr. Burrell: *Chest Cases.* 3 P.M., Dr. Pritchard: Medical Wards.

Wednesday.—11 A.M., Medical Registrar: Medical Wards. 2 P.M., Dr. Burnford: Medical Wards. 2.30 P.M., Mr. Donald Armour: Surgical Wards.

Thursday.—10 A.M., Dr. Grainger Stewart: Neurological Dept. 2 P.M., Mr. MacDonald: Genito-Urinary Dept. 4.15 P.M., Sir Henry Simson: Lecture: *Meddlesome Midwifery.*

Friday.—10.30 A.M., Dr. Dowling: Skin Dept. 12 noon, Surgical Registrar: *Surgical Pathology.* 2 P.M., Mr. Vlasto: Throat, Nose, and Ear Dept.

Saturday.—10 A.M., Dr. Saunders: *Medical Diseases of Children.* 10 A.M., Mr. Banks-Davis: Operations on Throat, Nose, and Ear.

Daily, 10 A.M. to 6 P.M., Saturdays, 10 A.M. to 1 P.M., In-patients, Out-patients, Operations, Special Departments.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen-square, Bloomsbury, W.C.1.

POST-GRADUATE COURSE: MAY–JUNE, 1925.

CLINICAL LECTURES AND DEMONSTRATIONS.

Monday, May 11th.—2 P.M., Out-patient Clinic: Dr. Hinds Howell. 3.30 P.M., *Syphilis of Nervous System:* Dr. Adie.

Tuesday, May 12th.—2 P.M., *Out-patient Clinic:* Dr. Walshe. 3.30 P.M., Subacute Combined Degeneration and Allied Diseases: Dr. Birley.

Thursday, May 14th.—2 P.M., Out-patient Clinic: Dr. Kinnier Wilson. 3.30 P.M., Methods of Testing the Eighth Nerve: Mr. Theodore Just.

Friday, May 15th.—2 P.M., Out-patient *Clinic:* Dr. Gordon Holmes. 3.30 P.M., Demonstration of Re-educational Methods in Exercise Room: Mr. Elmquist

COURSE OF LECTURES AND DEMONSTRATIONS ON THE PATHOLOGY OF THE NERVOUS SYSTEM.

Monday, May 11th.—12 noon, The Cerebro-Spinal Fluid. *Physiology and Pathology: Dr. J. G. Greenfield.*

COURSE OF LECTURES AND DEMONSTRATIONS ON THE ANATOMY AND PHYSIOLOGY OF THE NERVOUS SYSTEM.

Monday, May 12th.—12 noon, The Neuron, Conduction of the Nervous Impulse, The Reflex: Dr. Walshe.

Dr. H. J. Macbride will give a COURSE OF EIGHT CLINICAL DEMONSTRATIONS, chiefly on METHODS OF EXAMINATION OF THE NERVOUS SYSTEM, in the Wards at 10 A.M. on Tuesdays and Fridays, if sufficient entries are received. The fee for this Course will be £2 2*s*. (commencing Tuesday, May 19th).

Mr. Armour and Mr. Sargent operate at the Hospital on Tuesday and Friday mornings at 9 A.M., or at such other times as may be announced.

Any part of the Course may be taken separately. Special arrangements will be made for those unable to take the whole Course.

Fees should be paid to the Secretary of the Hospital at the Office on entering for the Course.

J. G. GREENFIELD, Dean of Medical School.

UNIVERSITY OF LONDON ADVANCED LECTURE IN NEUROLOGY.

Friday, May 15th.—5 P.M. (at Charing Cross Hospital Medical School), Prof. B. Brouwer (Amsterdam): The Projection of the Retina in the Brain.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.

Thursday, May 14th.—4 P.M., Mr. Barrington-Ward: Glands in the Neck.

INSTITUTE OF PATHOLOGY AND RESEARCH, ST. MARY'S HOSPITAL.

Thursday, May 14th.—5 P.M., Mr. A. T. Glenny: The *Principles of Immunity as Illustrated by Protective* Inoculation against Diphtheria.

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, Leicester-square, W.C.

Tuesday, May 12th.—5 P.M., Dr. Barber: Scleroderma.
Thursday.—5 P.M., Dr. MacLeod: Tuberculosis Cutis.

UNIVERSITY OF LIVERPOOL POST-GRADUATE LECTURES. (At 3.30 P.M.)

Tuesday, May 12th.—(At the Southern Hospital.) Mr. T. L. de Courcy: *Treatment of Common Eye Disorders.*

Wednesday.—(At the Northern Hospital.) Mr. Simpson: *Surgical Cases.*

Friday.—(At the Royal Infirmary.) Mr. Kennon: *Surgical Cases.*

MANCHESTER ROYAL INFIRMARY.

Tuesday, May 12th.—4.15 P.M., Mr. W. H. Hey: Indications for Surgical Intervention in Chronic Abdominal Disease.

Friday.—4.15 P.M., Dr. D. E. Core and Mr. H. H. Rayner: Demonstration of Cases.

MANCHESTER BABIES' HOSPITAL, Burnage-lane, Levenshulme *Post-Graduate Lectures.*

Friday, May 15th.—8 P.M., Miss Herzfeld: Hernia in *Infants.*

Appointments.

Grout, John Lewis, F.R.C.S. Edin., L.R.C.P. Lond., M.R.C.S., has been appointed Honorary Radiologist and Physician in Charge of the Electro-Therapeutic Department at the Sheffield Royal Hospital.

Oliver, O. H. D., L.R.C.P. & S. Edin., L.R.F.P.S. Glasg., Certifying Surgeon under the Factory and Workshop Acts for the Coxhoe District of the County of Durham.

Smith, H. G., M.D., B.S. Lond., D.P.H. Camb., Medical Officer of Health for Lincoln.

White, Clifford, M.D., F.R.C.P. Lond., F.R.C.S. Eng., Obstetric Physician to University College Hospital.

Paddington Green Children's Hospital: Strong, A. J. H., M.B., Ch.M. Sydney, House Physician; Morton, R., M.B., Ch.B. Edin., House Surgeon.

Queen Charlotte's Maternity *Hospital:* Roberts, C. H., F.R.C.P. Lond., F.R.C.S. Eng., Consulting Obstetric Surgeon; Phillips, L. G., M.S., M.B. Lond., F.R.C.S. Eng., Obstetric Surgeon to In-patients; Wilson, C. M., M.D., F.R.C.P. Lond., Physician; and Williams, L. H. W., M.D., M.S. Lond., F.R.C.S. Eng., Obstetric Surgeon to Out-patients.

Vacancies.

For further information refer to the advertisement columns.

Barnsley, Beckett Hospital and Dispensary.—Jun. H.S. £140.
Bedford County Hospital.—Asst. H.S. £130.
Birmingham General Dispensary.—Res. Holiday Locum, 9 guineas weekly.
Cancer Hospital, Fulham-road, S.W.—H.S. at rate of £100.
Cardiff Royal Infirmary.—Res. Reg. and Anæsthetist. £100.
Carmarthen, Joint Counties Mental Hospital.—Asst. M.O. at rate of £350.
Coventry and Warwickshire Hospital, Coventry.—Two Hon. Asst. S.'s.
Darlington County Borough.—Asst. M.O.H. £750.
Dreadnought Hospital, Greenwich.—Anæsthetist. 50 guineas.
Durham County Council, Education Dept.—Asst. School Oculist, £600. Also Asst. School M.O. £600.
East London Hospital for Children, &c.—Morning Cas. O. at rate of £120. Also Anæsthetist. £50.
Elizabeth Garrett Anderson Hospital, Euston-road, N.W.—H.P., Obstet. Asst., and two H.S.'s. Each at rate of £50.
Kensington Tuberculosis Dispensary, 119, Ladbroke-grove, W.—Temp. Tub. Officer for one month. 35 guineas.
Lanark County.—Bacteriologist and Pathologist. £750.
Leicester City Education Committee.—Asst. Sch. M.O. £600.
London Temperance Hospital, Hampstead-road, N.W.—Res. M.O. at rate of £175.
Maidstone, Kent County Ophthalmic Hospital, &c.—H.S. £300.
Manchester City.—Female M.O. £632 7*s*. 8*d*.
Manchester, East Lancashire Homes for Disabled Sailors and Soldiers, Broughton House, Park-lane, Kersal.—Res. Med. Supt. £400.
Manchester Royal Infirmary.—Dickinson Research Travelling Scholarship in Medicine. £300. Also Res. Surg. O. £200.
Manchester, St. Mary's Hospitals.—Hon. Asst. S.
Metropolitan Hospital, Kingsland-road, E.—Surg. for Diseases of Women. Also Asst. P.
Middlesex County Council.—Deputy County M.O.H. at rate of £900.

Middlesex Hospital, W.—P. and Asst. P.
Newcastle-upon-Tyne, Princess Mary Maternity Hospital.—Asst. Res. M.O. at rate of £10.
Paddington Metropolitan Borough.—M.O.H. £1000.
Patna, India, Medical College.—Prof. of Pharmacology, Prof. of Anatomy, and Prof. of Physiology. Each Rs.1200 per mensem.
Royal Northern Hospital, Holloway, N.—P., Two Asst. Dent. S.'s. Also Obstet. S.
Salford Union Infirmary, Hope, Pendleton, near Manchester.—Asst. Res. M.O. at rate of £275.
Sheffield Royal Infirmary.—H.P. £80.
Shrewsbury Borough.—M.O.H., &c. £800.
Stockport Infirmary.—Third Res. H.S. £175.
Truro, Royal Cornwall Infirmary.—H.S. £170.
West Middlesex Hospital, Isleworth.—Asst. Med. Supt. £250.
Winchester, Hampshire County Council.—Asst. M.O.H. £600.
York Dispensary.—Res. M.O. £175.

Births, Marriages, and Deaths.

BIRTHS.

CROCKFORD.—On April 29th, at Terrace Lodge, Axminster, Devon, the wife of A. L. Crockford, M.C., M.B., of a daughter.

FERGUSSON.—On April 29th, at Albert-terrace, Edinburgh, the wife of Dr. A. E. Fergusson, Westcliff-on-Sea, of a son.

POPHAM.—On April 28th, at a nursing home, Harrogate, the wife of Captain Cyril Popham, R.A.M.C., of a son.

RITCHIE.—on April 27th, at Whiteholme, Northwood, Middlesex, the wife of Dr. Douglas Ritchie, of a son.

WAKELY.—On April 27th, at Delmynden, Carshalton, the wife of Dr. A. S. Wakely, of a son.

MARRIAGES.

GIBSON—BEAVER.—On April 30th, at St. Stephen's, Bournemouth, Herbert Robert Burnett Gibson, Major, I.M.S., to Ellen Cromwell Beaver, daughter of the late Milton Stuart, of Liverpool, and widow of Arnold Atwood Beaver, late of Heather Lodge, Bournemouth.

MACBRIDE—ORR.—On April 28th, at Hillhead Parish Church, Glasgow, Henry John Macbride, M.D., of Harley-street, London, to Jean Alexandra, younger daughter of Mr. and Mrs. P. Hunter Orr, Belhaven-crescent, Glasgow.

SHERIDAN—HARRIS.—On April 16th, at Brompton Oratory, Captain Bertrand C. O. Sheridan, M.C., R.A.M.C. to Vera, younger daughter of Mr. and Mrs. T. P. Harris, of Hillfields, Pedmore, Worcestershire.

DEATHS.

AMOS.—On April 27th, at Geneva, Samuel Edward Amos, M.R.C.S., L.R.C.P., of Gazley, Ventnor, I.W., in his 40th year.

WILLIAMS.—On April 24th, at "Hagren," Penyffordd, near Chester, after a short illness, Thomas Gee Williams, M.B., in his 40th year.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

MANCHESTER WAR MEMORIAL BEDS AND COTS.—The War Memorial Committee have an unspent balance of £1082 from the £10,572 subscribed for the war memorial in St. Peter's-square, which cost only £6490. It was agreed that it would be carrying out the spirit which prompted the response if beds were endowed for the use of dependants of soldiers and sailors who fell in the war. The Lord Mayor was authorised to arrange for the endowment of two beds at the Royal Infirmary, and one cot and one bed at the Ancoats Hospital, and a cot at the Royal Manchester Children's Hospital at Pendlebury. When the beds are not required for the specific purpose they may be used as the authorities shall determine. The beds and cots will be called the Manchester War Memorial bed or cot as the case may be.

"BAKERS' ITCH": COMPENSATION CASE. — At Hanley County Court on April 24th, Judge Ruegg, K.C., delivered a reserved judgment of importance to employers and workers under the Compensation Act. A baker, Thomas Starkey, of Stoke-on-Trent, sought compensation from his employers, Messrs. Clayton and Sons, bakers, of Loughton, on the ground that he had contracted "bakers' itch" while in their employ. The judge said it was admitted that Starkey had fully recovered, but the applicant submitted that the moment he went back to work the disease would recur. The judge decided that he could not give a workman compensation in respect of a disease from which he was not suffering, although the disease might immediately recur if the workman resumed his old employment. It was an extraordinary difficult question to consider, the judge remarking that if he awarded compensation it would be compensation for life. The Act never intended that, and he added that if the man did return to baking and the disease recurred, that would be a new accident, which, if proved, would entitle him to compensation. It was intimated there would be an appeal.

Notes, Comments, and Abstracts.

THE TREND OF MODERN HYGIENE.*

BY ANDREW BALFOUR, C.B., C.M.G., M.D., F.R.C.P. EDIN., D.P.H. CAMB.

THE trend of modern hygiene or the modern trend of hygiene—which is the better title? It is a moot point, but, after due consideration, I decided to employ the former for the following reason. While one must admit that, almost from the beginning of time, or at least from the beginning of human history, certain general hygienic principles have remained unchanged, and while one must also agree that much of our latter-day hygiene is a reversion to the practice of the Ancients, yet of late years such a remarkable and far-reaching change has come over both the spirit of our dreams and our actual undertakings that we may, with some justice, assert that a new hygiene has been developed, a modern health campaign possessing features which entitle it to be classed as a distinct entity.

[Dr. Balfour then briefly outlined the practice of hygiene throughout the ages, from the days of the ancient Hebrews to the time when a sanitary conscience began to develop in this country, through the labours of such pioneers as Howard, Pringle, Monro, Lind, Trotter, Shaftesbury, Chadwick, Simon, Southwood Smith, and Snow. These men, he said, found Augean stables to be cleansed, and gradually, as order took the place of chaos, as cleanliness replaced dirt, as the work of the laboratory came to be applied to every-day life, as there was more time for thinking and observation, it became evident that, despite all the progress, there yet remained new worlds to conquer. Thus modern hygiene was born. He continued:]

Education of the Public.

The most important item in the public health campaign is, beyond all doubt, education; not so much education of the medical student, the medical man, the dental surgeon, the veterinarian, or the sanitary inspector, as education of the lay public. It sounds simple, but in reality is beset with many difficulties, and perhaps the chief obstacle which lies in the way is the innate selfishness which seems to pervade such a large section of the community on these matters. It must be remembered, however, that sufficient time has not yet elapsed for the effects of the new hygiene to be generally apparent. Striking results have been obtained and are being obtained, but it will take at least a generation before any great and universal effect will be visible, and our modern activities have not been in full swing for five-and-twenty years.

A gratifying feature of the educational campaign is the number of voluntary agencies striving to impart knowledge and to popularise scientific endeavour as applied to the public health. No less than 23 of these embassies of health, as perhaps we may call them, all operating from London, are listed by Sir George Newman in his important memorandum on Public Education in Health, and there are others scattered about the country. They are concerned with various lines of activity and, doubtless, accomplish much good work, but the tendency nowadays is to make health departments responsible for the dissemination of information. This is a duty which, of course, has been shouldered by the Ministry of Health in this country, and which has also been undertaken by the health departments of various municipalities, as witness the legends which now appear on lamp-posts and the posters and pamphlets which warn and guide the citizen.

Dr. Dru Drury, speaking on public health in his address at the Nineteenth South African Medical Congress, says: "We must learn to think so naturally, as members of a community, that we shall feel at least as much self-reproach in publishing rotten books or spreading infection in a school, in spoiling a landscape with refuse, or wasting water, in overworking servants or driving with an open exhaust, as we do now in eating peas with a knife or dropping aitches."

Periodic Medical Examination.

The question of life insurance brings to mind quite another kind of education and a new trend of hygiene. Human nature being what it is, a considerable section of mankind is more influenced by what we may call financial education than by any other means. Demonstrate material monetary benefits resulting from hygienic measures and you may carry the day. Life insurance companies have of late years realised this cardinal fact, and some of them now operate, as Dr. Otto May has pointed out, in three ways. At least, certain of the American companies do. Here we are more conservative and cautious, while, of course, National Health Insurance has been established in this country and, to some extent, proceeds along the lines which a company like the Metropolitan Life Assurance of New York has followed. Some of the advisory medical officers to British companies, including Dr. May himself, are not yet convinced of the utility of all the American undertakings. These latter are of a tripartite nature and may be listed shortly as propaganda, the endowment of research, and individual case treatment. The last named connotes periodical medical examination of policy-holders.

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* Abstract of a paper read before the Royal Society of Arts on April 29th, 1925.

The first two are beyond criticism, but the success of the third is imperilled, partly because it is difficult and expensive to establish a really effective diagnostic service, and partly because a lack of interest is apparent amongst policy-holders. They submit to a first examination impressed, perhaps, by its novelty, but few present themselves for a second and still fewer for subsequent overhauls. Hence, Dr. May and others believe that in this country insurance companies had better confine themselves to supporting voluntary health organisations. It would seem that the time is not yet ripe for the above-mentioned development, although it was suggested in England by Dr. Dobell as long ago as 1870. There is always a pioneer in matters hygienic, a John the Baptist, and in this question of periodic physical examinations Dobell played a part like that filled by Robson in connexion with the control of venereal diseases. Both were like voices crying in the wilderness.

That such a consummation is highly desirable, that it may have far-reaching results, and that it should react on the health of the community, is emphasised in a typical American manner by Dr. John Dill Robertson, of Chicago. He does not hesitate to charge the general practitioner with criminal negligence, hoping that his message will prove so irritating that it will stimulate him to a sense of his responsibilities as a guardian of the public health in his own special direction. According to Robertson, who, of course, merely voices in rather a strident tone the views of others, the true function of the private practitioner is not to cure the sick, but so to advise his patients, or, rather, his clients, that they will remain in good health. Away back in 1907 the same argument was advanced as forcibly by Dr. John McVail in a memorandum accompanying his report on *Poor-law Medical Relief in England and Wales*. In a recent address he developed his theme and indicated seven directions in which the family physician might be of service as a valuable ally of the medical officer of health.

The Ideal Family Doctor.

I cannot here quote him in full, but he deals with the doctor as a historian, an inquirer into family history, and as an observer and checker of tendencies towards general disease. Let it be noted that amongst the diseases mentioned figure obesity and alcoholism. He envisages the physician as a health guardian of the child, a watchful attendant both of mind and body, a corrector and remover of defects, an adviser to the parents. He traces the extension of this medical care to the youth and the maiden, when the practitioner should guide as to work and athletics and be upon the qui vive to remedy faulty tendencies of all kinds at the threshold of adult life. He pictures him as the friend and confidant of the woman, saving her from the special troubles besetting her sex, and watching the adult man, to see that he does not develop some trade disease, strain his heart, or damage his respiratory organs. In addition, he speaks of general examinations like those for which Dr. Robertson pleads, and he figures the doctor as a prop for old age trying to ward off apoplexy and stay the morbid processes which too often make the evening of life a tragic misery. Dr. McVail is careful to point out that the doctor can only assume such a rôle with the consent of the individual—the adult for himself, the parent for the children.

A specific application of this fine ideal, an ideal which, as we will see, requires certain developments or ever it can come to maturity, is seen in the investigation of "golf hazards," by Dr. Lieb, who, startled by the occurrence of sudden deaths upon the links, collected data which he incorporated in a paper published by the *New York State Journal of Medicine*. Dr. Lieb found that in every case organic disease was present, and that the golfing was only an accessory factor. The important point, however, is that, had those who perished undergone periodical physical examinations and had ordered their lives in accordance with the findings, they need not have died.

Faults in Medical Education.

Now while, presumably, the majority of medical men at the present time could be trusted to give a sound opinion on the middle-aged golfer, it is by no means so certain that they could adequately fulfil the duties listed by Dr. McVail. They have been reared, be it remembered, in an atmosphere of curative medicine, and they have not been trained to look for the beginnings of disease. Of course, amongst them there may be a few James Mackenzies with the seeing eye and the understanding heart, but, taken as a whole, the general practitioner is a patcher, not a preventer. That is not his fault. In the past his training has been defective.

For one thing, he has struggled through a series of more or less water-tight compartments. There has been little linking up of his early scientific knowledge with his later medical and surgical studies, and, if he is to act effectively, his medicine and surgery must be leavened with a leaven wherein physics, chemistry, biology, anatomy, and physiology are combined as ingredients, together with sympathy and common-sense. For another, the doctor, as a student, has been so crammed that too often one mass of ill-digested facts has, throughout the curriculum, crowded out another in process of assimilation, and the only wonder is that he has emerged sane and sound and with a modicum of useful knowledge. For yet another, the preventive aspects of his life's work have not been explained to him, and the vast possibilities which lie before him are too often as a sealed book.

Now all this is changing. The beginnings of that change are recounted in the masterly treatise by our distinguished chairman, his memorandum entitled "Recent Advances in Medical Education in England," or, as he might have written, "Great Britain," for he cites Scotland again and again, and the old Alma Mater which I had the honour to share with him. Sir George Newman and others have remembered what happens when the blind have blind leaders, and by degrees a new type of doctor should be evolved, who, it is to be hoped, will combine the acumen of the old clinical observer with the broad outlook of the sane scientist.

What We Eat and Drink.

One of the most significant happenings in the modern health campaign is the attention paid, not only to dietetics, but to food preservatives and to the handling of food-stuffs. The layman, I fear, must be a little bewildered by all that is said and written about diet. Screed succeeds screed on vitamins. Here an authority thunders against butchers' meat and starchy foods, there an oracle condemns milk for adults. We read of human cesspools. We are told that our faulty food habits explain the increase of cancer. At times one wonders how the human race has managed to survive at all, and exclaims with Pontius Pilate, "What is Truth?" And yet we are progressing, for we are beginning to understand the relation of diet to endocrine secretion and we are correcting errors into which we have drifted through non-adaptation to our complex surroundings, through failure to understand that what the primitive man can do with impunity the civilised man, or at least the town-dweller, does at his peril. The truth really lies in moderation, for, in a phrase I once coined and which perhaps will bear repetition, it is still the case that many folk by their copious libations wash themselves into graves which they have dug with their own teeth. Copious libations do not signify wholly, or even mainly, the imbibition of alcoholic beverages, for a vast deal of digestive trouble is brought about by excess in tea and coffee drinking, and by the swilling of liquid, frequently in effervescing form, during meals. Most of us after middle-age eat far more than we require. War experience should have taught us a salutary lesson, but, like other lessons, it has been forgotten.

I am inclined to think that eventually the chief value of the scientific tirade on foods and feeding will be found to lie in the fact that it will teach some sections of the most important class of the community—the workers—how to live cheaply as well as healthily, how to get the best food value for money spent. This in itself is a great matter, for the waste at present is enormous. Remember, however, there are many poor housewives who, on the practical side, could give the scientist points.

Coöperation in Hygiene.

We have seen how voluntary organisations coöperate with official agencies, how health authorities should coöperate with the lay press, how insurance companies try to coöperate with their policy-holders, how the doctor must coöperate with his clients, and we might also have considered the coöperation of the employer with the employed, but perhaps the most significant trend in modern hygiene is that international coöperation which has sprung into being since men ceased slaughtering each other. True, there was international coöperation prior to the Great War—quarantine is an old story—but there has never previously been a union of peoples on a large scale, not solely for the purpose of safeguarding themselves from the ravages of disease, but with the avowed intention of stamping out disease, wherever found, and of spreading light and learning. It is a fine conception, and is seen in its highest development at Geneva, where the Health Section of the League of Nations is engaged upon its beneficent and widespread work, and in the foreign operations of the International Health Board of the Rockefeller Foundation, for these, though of American origin, depend upon collaboration with other nations.

There is much to be learned from international coöperation, for, after all, the British Empire is a congeries of nations and, apart from any other consideration, anything which serves to bind them more closely in bonds of amity is not only desirable but essential. Surely health considerations should be as potent a tie as financial links! At any rate, they are less mundane and more altruistic.

Black Spots of Empire.

We do not deserve to own some parts of our possessions, for at the present moment, from a hygienic standpoint, they are a disgrace to the British flag. I have no hesitation in saying that the Americans are justified in the feelings with which they view most of the British West Indies, and that the Dutch are more than justified in looking upon some of our hygienic efforts in the Far East with a kind of pitying contempt. 'Is this a fitting position for the Empire which bred a Simon, a Chadwick, a Patrick Manson? Let us not underestimate the difficulties, let us not overlook how much has been accomplished, above all, let us take into consideration what is now being done and be thankful that there is much to our credit; but, at the same time, as we cannot now lead in the coöperation movement, let us imitate it and improve upon it within the confines of the Empire. Is it not significant that on the other side of the Atlantic a Pan-American Sanitary Code has been formulated to which no less than 18 nations are now adherents?

The conditions in a country like India are such that I sometimes think it would be well if the practice of hygiene there and in some other lands assumed the aspect of religious exercises. There are many forms of worship inferior to that of the goddess Hygeia, and if only the devotions could be adapted to the mentality and habits of the people, I believe more benefit would accrue than from all the efforts now made.

In Africa the case is rather different, and at the present time a great effort is being made to educate the African along sound lines. The trend is towards creating native hygienists who will be able to aid in the sanitary salvation of the Dark Continent. I have no doubt, from what I have seen, that this is capable of accomplishment, though it will take time and money. What the Americans call "visual education" is badly needed, and whether this be accomplished by the cinematograph, by diagrams and models in the schools, or by the establishment of graphic museums, care should be taken that it is not neglected in any scheme for native training.

The Future.

Lastly, both at home and abroad, stress should be laid on the financial aspect of public health work, and the ultimate aim of the hygienist should be clearly and definitely stated. The monetary value of sanitary endeavour is a very tangible thing, and statistics are now available regarding many lines of health work which are most impressive and should convince all save the cranks and the wilfully ignorant. Thus, taking industry, which is so closely related to finance, we know, beyond all manner of doubt, that attention to mental hygiene in factories and workshops promotes harmony and leads directly to a larger output.

A hopeful sign is that there is much enthusiasm and no little idealism in public health circles, and, so long as these are well regulated, they cannot fail of their effect. Yet it is wise to bear ever in mind the dictum of Rienzi and the wisdom of Adam Smith. Rienzi wrote: "The prudent man may direct a state, but it is the enthusiast who regenerates it or ruins," while Adam Smith, in his "Wealth of Nations," before the dawn of the so-called scientific era, declared: "Science is the great antidote to the poison of enthusiasm and superstition."

MICROSCOPY OF THE LIVING EYE.

WE have previously had occasion to refer to recent methods of examining the structure of the living eyes under high magnification with the aid of illumination from the slit-lamp. To get full value from the apparatus it is necessary to serve an apprenticeship in its employment, just as it is necessary for the medical student to learn the use of the ophthalmoscope. For the last few years Prof. Alfred Vogt, of Basle, has conducted classes each summer, which have been attended by ophthalmologists from all over Europe. We now hear that Mr. Basil Graves, who has devoted much time to this subject at hospitals in London, is conducting similar classes in America under the auspices of the Graduate School of Medicine of the University of Pennsylvania. The ophthalmologists who attend these courses are divided into groups of six or nine and each course consists of ten lectures followed by practice with the instrument. This invitation to Mr. Graves was originally for three months, but has been extended to six. It looks as though American ophthalmologists were preparing to take the lead in the discoveries which some slit-lamp enthusiasts anticipate.

CHRONIC ULCERATIVE STOMATITIS.

To the Editor of THE LANCET.

SIR,—In reply to Dr. Meadows (THE LANCET, April 18th) my experience has been that these cases yield readily to dieting. It is necessary to interdict sugar in any form, and also to limit the quantity of fats taken. I allow butter to be taken freely, but no fat of meat, no bacon, no cream, and no milk as a beverage, although the latter may be taken in tea or coffee. Plenty of fresh butcher's meat should be taken with potato and green vegetables, but no fruit, and, of course, no sweet puddings or pastry. Fish and eggs are also suitable. I have not found any medicine of much service, and for local treatment I prefer nitrate of silver applied daily to the ulcers until they are nearly healed.

I am, Sir, yours faithfully,

Brook-street, W., April 22nd, 1925. A. LESTOCK REID.

DISSEMINATION OF GERMS.

To the Editor of THE LANCET.

SIR,—It seems to me, and has done so for years past, that this subject is one for widespread propaganda by the Ministry of Health. Within my memory spitting in public places has been abolished. Why not this equally objectionable habit? The exhibition of your excellent picture (THE LANCET, April 25th, p. 901) on all trams, trains, and omnibuses would doubtless cost money. But how much illness, unhappiness, and working capacity would it not save? If all medical men, including medical officers of health, would do as I intend to do, and have copies of your article and picture printed and circulated amongst their patients, much good would result I am convinced.

May 2nd, 1925. I am, Sir, yours faithfully,

M.D., B.S.

THE GOAT.

THE keeping of goats is looked upon by some as a hygienic duty, even more than as a profitable hobby, for goats are highly resistant to tubercle. No statistics are available for the British Isles, but in Holland, where goats are not kept under the best conditions, during 1911–20 out of a total of 39,188 animals slaughtered only 54 were found to be suffering from tuberculosis. The milk of the goat is rich in protein and fat and, as Dr. B. D. Z. Wright points out in the British Goat Society's Year Book,[1] is tolerated by some children who cannot take cow's milk. There is also less chance of fæcal contamination of the milk. The Year Book contains a number of very practical articles on goat-keeping, and a good case is made out for improving the goat's position in the agricultural life of the country.

THE "VIC" TONIC FACE CLOTH.

WE have received from Messrs. Grout and Co., Norwich, a face cloth, loofah-like in texture, which should be a useful toilette adjunct; the friction to the skin on its employment is delicate, while the softness of the fabric makes the smallest folds accessible. When soaped it does not get slimy, a fault with many face cloths, and its small size is an advantage to the traveller. Each cloth is wrapped in a sealed envelope and is sold at the price of 1*s*.

A DANGEROUS DEVICE WITHDRAWN.

WE are informed that owing to protests made on behalf of the medical profession the device—a sponge designed for insertion into the vagina during menstruation—to whose dangers we drew attention in THE LANCET of April 18th, has been withdrawn from sale, and remittances for purchase already sent are being returned. This public-spirited action on the part of the company responsible for its manufacture deserves praise.

SHAVALLO.

THIS is a shaving soap prepared by Messrs. J. Knight and Co., Ltd., Royal Primrose Soap Works, Silvertown, E., which has many of the properties which careful shavers look for; it is bland, makes a good lather and is pleasantly scented. The preparation is supplied in a convenient little celluloid case from which it should not be removed, as the roll of soap can be moved up and down within the case by pressure from the bottom.

Enquirer.—We understand that Vitaglass, made by Mr. Lamplough, 17, Victoria-road, King's Norton, is transparent to ultra-violet rays as short as wave-length $275\mu\mu$. This is rolled cathedral glass suitable for veranda roofs, shelters, skylights, and upper parts of windows. It is hoped to use it for bulbs of tungsten filament lamps which might then be employed as mild sources of ultra-violet rays. As sheet glass the cost is 3*s*. to 4*s*. a square foot.

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[1] The British Goat Society's Year Book for 1925. Compiled and issued by the hon. secretary, Thomas W. Palmer, 10, Lloyd's-avenue, London, E.C.2. Pp. 179. 1*s*. 6*d*.

Memorial Lecture

ON

LISTER'S GREAT ACHIEVEMENT.

Delivered before the Royal College of Surgeons of England on May 14th, 1925,

BY SIR W. WATSON CHEYNE, BART., K.C.M.G., D.SC. OXF., LL.D. EDIN., F.R.C.S. ENG., F.R.S.

MR. PRESIDENT, LADIES AND GENTLEMEN,—Before I begin this lecture I should like to say how much we all regret the sudden death of Sir Rickman Godlee, which has cast a gloom over to-day's proceedings. Sir Rickman Godlee took a very active part in the Lister Memorial funds and was, I know, looking forward very much to the proceedings to-day. I also had been looking forward to meeting him. Sir Rickman Godlee and I were very closely associated for many years as Lister's private assistants, and a more delightful, able, and loyal colleague I cannot imagine. I am sure that everyone here sympathises most sincerely with Lady Godlee in her great bereavement.

I must thank the Council of this College for the great honour they have done me in awarding to me the first Lister Memorial Medal and Prize. I need hardly say that the medal commemorating my great master and friend will be one of the most treasured of my possessions.

The subject of the lecture which must be given by the recipient of this honour is left entirely to his judgment and will naturally in the future refer in the main to work in which he has himself been principally engaged. But on this occasion I feel convinced that as the first recipient of this honour, and as one of the little band of men[1] who knew Lister and his work most intimately, and who had the extraordinary good fortune of being closely associated with him throughout his great achievement, I ought to put on record matters connected with his work and not especially concerning myself. I hope that my decision will be acceptable to you.

As a matter of fact, I have for some time had a great desire before I depart this life to place before the profession as fair a statement as I can of Lister's great achievement, his aims, the principles on which he started, how they became modified as time went on, and the final result. Having, however, practically given up active surgical work I have felt more and more diffidence in laying before the profession a story which to some may appear to be past history and not of any actual living value at the present time. This award, however, provides the stimulus, and indeed the immediate necessity, for carrying out my desire. The story I have to tell, though going back for just 60 years, is one still full of vitality, of instruction, and of the gravest importance to surgery. It is far from being a closed book, the whole matter is still fluid, perfection has not yet been obtained in all directions; indeed, at the present time the tendency seems to be rather to remain satisfied with what has been achieved than to continue the effort to obtain perfection.

When I came to write a lecture on these matters in full I found that, even after cutting it down as far as possible by omitting extensive passages and by condensing others very much, its delivery would far exceed the time at my disposal and try your patience to breaking point. At the same time I wished to make it complete, and I have, therefore, attempted to solve the problem by taking out of the original lecture the more personal matters which seem most suitable for a general discourse (and my own experience is that the less the dry detail in a lecture the more successful it is) and publishing in the same volume with this discourse as an appendix the remainder of what I wrote originally, which can be perused and pondered over at leisure.

THE FIGHT AGAINST SEPTIC DISEASES OF WOUNDS.

The story that I have to tell to-day is one of the most fascinating tales that I know of and far exceeds in interest the most exciting detective story ever written. And its influence on the life and health and usefulness of mankind surpasses all imagination; and it is a true story. It is the story of a fight against a series of diseases—the infective or septic diseases of wounds—which have attacked wounds probably since the world began. As a matter of fact, any wound of the skin, whether as the result of an accident or of an operation deliberately performed by the surgeon, involved up till Lister's time a very great risk to the patient of serious illnesses called "septic diseases," which, indeed, very often proved fatal. And although numerous attempts had been made by surgeons of all countries and through many ages to discover the cause and to find a remedy for these diseases, no real progress was made till Lister took up the work. Up to that time a surgical ward in a hospital was a place in which the most of the patients were visibly ill, with flushed faces, parched lips, delirium, severe pain, &c., and many of them were evidently on the verge of death; the wards were pervaded with a peculiar mawkish odour which was very trying to newcomers. I suppose very few here to-day remember those days. What a contrast to the surgical ward of to-day with its fresh air, happy and contented patients, looking as if nothing had happened to them, and very slight mortality. This we owe to Lister, and much more, for not only has his work led to the practical disappearance of septic diseases after operations, but it has enabled the surgeon to perform many operations which prolong life, restore movements, rectify deformities, and add to the usefulness and comfort of mankind.

Lister's first introduction to septic diseases was when he became a dresser in the surgical wards at the University College, London. I think that his very first case had been attacked by phagedænic gangrene, one of the most terrible of these septic diseases. That and other similar cases impressed him so greatly that he never forgot them, and always felt that no study was more urgent or might be more fruitful than the attempt to find out the cause, the prevention, and the best methods of treatment of these septic diseases.

SEPSIS AND PUTREFACTION.

We may here pass over his earlier years and come to the time when he was professor of surgery in Glasgow University and was appointed one of the surgeons at the Glasgow Royal Infirmary. This was late in 1861, and by that time Lister had done excellent experimental work on the early stages of inflammation, coagulation of blood, &c.—work which was to be of the greatest value to him in future and for which, I may add, he had been elected at the early age of 33 a Fellow of the Royal Society. At this time he had come definitely to the conclusion that sepsis was closely bound up with putrefaction of the blood and discharges in the wound, and that if he could only prevent this putrefaction septic diseases would in all probability disappear; the cause of putrefaction was, however, still unknown. Most surgeons attributed it to the action of the gases of the air, especially of the oxygen, on the organic fluids in the wound, while others pre-supposed the existence and action of indefinite bodies which they called "miasms" and which were supposed to develop in unhealthy regions and pass into the air. On the oxygen theory many attempts had been made in former years to prevent the access of air to the wounds, but without any improvement as regards sepsis, and on the assumption that the gases in the air, or the "miasms" in the air which were also supposed to be gaseous, were the cause of the trouble Lister could not devise any remedy. Lister, however, made an extensive experiment in his wards with ordinary cleanliness but without success, and one can quite imagine his depression when he found that the best methods that he could think of did not help him at all and that pyæmia and all the other septic troubles dogged his footsteps and rendered his best work nugatory.

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[1] In Glasgow, Lister's private assistant was Sir Hector Cameron who, I am glad to say, is still well and active: in Edinburgh his assistant was Dr. John Bishop, who died shortly after Lister went to London—a most lovable man and deeply regretted by all who knew him. In London his assistants were the late Sir Rickman Godlee and myself.

THE ORIGIN OF LIFE.

But it so happened, though Lister did not then know it, that the cause of putrefaction was being revealed about the time that he was appointed professor of surgery in Glasgow. For over a century a very interesting and sometimes a very heated controversy had gone on as to the origin of life, and in the first instance the controversy was carried on chiefly by priests. Indeed, I presume that it began on some such theological problem as this: Was there only one creation of life as suggested in the Bible, or is it possible that the conglomeration of certain atoms in certain ways would, shall we say, attract the vital spark (just as an electric current may be set up by the contact of various metals) and that in this way a new living organism might be produced? The advocates of the latter view, which came to be spoken of as "spontaneous generation," sought to support their opinion by elaborate experiments which were quickly disposed of by their opponents but only to lead to a fresh crop of experiments. One would never have thought that such an abstruse matter would have any practical influence on commerce and still less on the lives and health of living beings. As regards the former, however, the subject of fermentations became involved and it then became a matter of importance to chemists. About 1860 Pasteur not only closed the proof against the spontaneous generation of yeast cells, but also, I believe, quite unwittingly opened up a new and, as it ultimately turned out, an extremely vital line of research by pointing out that other fermentations apart from the vinous, such as the butyric and the putrefactive, were also dependent on living organisms which gained access to the putrescible fluids with the dust in the air or on surrounding objects and especially from other putrefying media. Pasteur himself does not seem to have had at the time any idea of the importance of this part of his investigations, and as far as I can ascertain only three men thoroughly realised it or at any rate made any attempt to utilise the knowledge within the next few years. These men were Jules Lemaire, Spencer Wells, and Joseph Lister. It will be of interest for the moment to sketch out what each of these men did with the knowledge which they acquired from Pasteur's work; in doing so I do not want in any way to compare these three men, but, as a matter of fact, just as no two persons have exactly the same finger-prints so I believe that no two persons have exactly the same arrangement of brain, and as thought and action are the results of the working of the brain no two persons will take exactly the same steps in the solution of a problem. Thus it is very interesting to compare the result of the action of different types of brain.

CONCLUSIONS OF VARIOUS OBSERVERS.

Jules Lemaire was, I fancy, of the type of the delightful, old, learned family doctor. He was evidently good at surgery, but he had no surgical hospital appointment and so had not the opportunity of testing any views he may have formed; he was also much interested in scientific matters. He saw at once that Pasteur's statement as to the cause of putrefaction was of great importance. He wrote quite a good deal on the bad effects which might arise from bacteria, and he washed his wounds with various antiseptics, notably with carbolic acid, with the view of interfering with the growth of bacteria in the discharge. He never, however, suggested, as Lister did, that these antiseptics should be used to kill the germs before they got a footing in the body or in the wound, and he spoilt his case by advocating the use of carbolic acid for all sorts of diseases. Evidently Lemaire's advocacy of carbolic acid had attracted attention, for Declat thought it worth his while to claim priority in the use of the drug.

Something like three or four years elapsed, and then I find that Spencer Wells, one of the pioneers in ovariotomy and subsequently President of this College, in an address at the meeting of the British Medical Association in 1864[2] gave a most excellent description of Pasteur's work and its bearing on surgery. I do not think that a better résumé could have been made. Spencer Wells was a great practical surgeon and a bold operator, but, curiously enough, he did not follow up the logical conclusions that he drew from Pasteur's works. Indeed, his only remark as to the practical application of the work to which he called attention was that "surgeons should always secure the most scrupulous cleanliness and purity of everything surrounding them," and as regards any other treatment he advocates the internal administration of sulphites in the form of sulphite or hyposulphite of soda. There is no doubt that the recognition of the value of scrupulous cleanliness in the sense of preventing the putrefactive germs from getting a footing was a very important advance, but a good deal more was needed for perfection.

The third man, so far as I can find, who took up Pasteur's work was Joseph Lister. I cannot make out exactly when this knowledge first came to him, but I fancy it was in 1864. I understand that he was walking home with his colleague, Prof. Thomas Anderson, the professor of chemistry in Glasgow, one afternoon towards the end of 1864, discussing putrefaction and its causes, when the latter suggested that he should read certain papers on fermentation and spontaneous generation which had been recently published by a rising young French chemist, Louis Pasteur. Lister, who naturally was not conversant with chemical literature, had not heard of Pasteur's work, nor had he followed the controversy on spontaneous generation, but he at once got these papers,[3] and from the perusal of them he found that Pasteur's experiments showed that it was not the gases of the air that the surgeon had to fear but minute living particles floating in the air and settling on surrounding objects in the form of dust. And he learned further that so long as these particles were excluded from the putrescible material after it had been boiled there was no sign of living organisms or putrefaction in the material. As soon, however, as the protection was removed and the dust was allowed free admission, minute bodies belonging to the lowest class of vegetable life could be seen swarming in the fluid, and putrefaction very quickly set in. The conclusion was that some of the particles which were excluded by filtration or destroyed by heat were actually living germs which, as they developed in the putrescible material, set up the putrefactive fermentation just as the vinous fermentation was only set up on the admission of living yeast cells.

One can well imagine Lister's excitement and delight when he realised from Pasteur's work that the enemy with which he had to deal was not a gas present everywhere and practically impossible to get rid of or avoid, but living solid particles floating in the air or present in the dust, capable of being killed or avoided—still a difficult problem no doubt, but not an insoluble one. These "germs," as they were called for a long time, were new to him and to the surgical profession generally. Long rods, known as vibrios, were comparatively easily seen swimming about in putrefying fluids, and also small rods and round bodies, but they had not been specially studied, and to many it seemed the height of absurdity to suppose that such minute bodies could be of any practical importance to the surgeon.

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[2] Brit. Med. Jour., 1864, ii., 384.

[3] See Œuvres de Pasteur, by Vallery-Radot, 1922, vol. ii.

LISTER'S APPLICATION OF PASTEUR'S WORK.

I do not think that at this time Lister, nor indeed anyone else, had any very definite idea as to the *modus operandi* of these germs. It was enough for him for the time being that they were the cause of the putrefaction of the discharges from the wounds and that the putrid fluids were somehow or other, if not the cause, at least very closely associated with the causes of local and general septic diseases. Lister's application of Pasteur's statements was: (1) That these germs must be prevented from getting into wounds during and after operations and that they must be killed if possible outside the wound; (2) that if they have succeeded in getting into a wound before the case is seen by the surgeon, as in compound fracture, they must be killed if possible before they have had time to spread and secure a footing, and further germs must be prevented from entering the wound afterwards.

Lister's method of dealing with the information gained from Pasteur's work was thus more definite and more drastic than the suggestions of the other two surgeons referred to, and reflects the action of the philosophical and experimental type of brain. He never swerved from his first decision that the aim of the surgeon must be the prevention of the entrance of living germs into the wounds or their destruction, if possible, before they can gain a footing. But it will be seen that as time went on he found that it would suffice under certain circumstances, especially in the interval between the dressings, to inhibit their growth without necessarily killing them. That his suggestion was the most fruitful of the three is evident from the further course of events.

On further consideration of the various ways of commencing this work it seemed to Lister that it would be best to select cases where the germs had had an opportunity of getting into the wound before the patient came under treatment, but where only a short time had elapsed since the injury, so short that the germs had probably not yet had time to gain a firm footing. Such cases were compound fractures, where the patient comes under the surgeon's care shortly after the accident, with the wound already infected, cases which were notoriously extremely dangerous, large numbers of patients with compound fracture dying of septic disease. In a vast experiment affecting the whole domain of surgery, such as the facts suggested to Lister, the responsibility of the surgeon was at the beginning, of course, very great lest instead of doing good he should make matters worse, but in compound fractures the prospects of the patients could hardly be made worse, and there was a very considerable chance that they might be much improved. And, in addition, the experience that he would gain in treating compound fractures might help him in dealing with operation wounds, which was a larger and much more complicated problem. Besides, except in very urgent cases, operations through unbroken skin could be delayed till he saw what happened in compound fractures.

As regards the procedure, all the laboratory experiments on fermentation and spontaneous generation had so far depended on the employment of heat to kill the germs or on filtration of the air to remove them; but neither of these plans seemed suitable for the present purpose, and therefore Lister turned his attention to chemical substances in the hope of finding one which would kill germs without seriously injuring the tissues exposed in the wound. Curiously enough, during 1864 he had been attracted by a notice in the newspapers about the remarkable effects on the sewage of the town of Carlisle by the use of carbolic acid, a small quantity not only preventing the smell, but also apparently destroying the entozoa which usually infected cattle fed on the pastures on which the sewage was placed. Prof. Anderson obtained for him a supply of this acid, which was sold under the name of German creosote. This substance was very impure and did not dissolve at all well in water—in fact, Lister stated at first that carbolic acid was not soluble in water, but later on, when he got a purer specimen, he found that it dissolved readily enough up to as much as 1 part of the acid in 20 parts of water, and in linseed oil in almost any proportion, but that the oily solution did not seem nearly so active as the watery one was.

It so happened that Lister had to wait a considerable time before suitable cases for his purpose were admitted to the wards. In fact, he had to wait something like ten months before his first real attempt at treatment was made. While we are waiting for the case of compound fracture to come into the ward I may occupy the time by giving you some account of the man himself and of the chief influences on his life.

LISTER AS A MAN.

I like to think of Lister, with his courtly manners and indomitable courage, as one of the knights of olden times sallying out single-handed to find and destroy a formidable enemy, armed with a great but imperfect generalisation or rather working hypothesis and a bottle of crude carbolic acid so impure that he tells us in his first paper that carbolic acid was insoluble in water. He had never seen the enemy, but he saw his ravages on every hand; he did not know how he acted in producing diseases; he did not know where he lived or how he lived. All he knew was that he was probably a unicellular body belonging to the vegetable kingdom and of extreme minuteness, not exceeding more than 1/20,000th of an inch in diameter. He knew nothing about the protective arrangements of the body so much spoken about at the present time. It is, I fancy, well that he did not, for he would have been so bewildered among the various ways in which it is supposed that the enemy on the one hand and the animal forces on the other act, that he would not have known where to strike and he might have failed completely. All that he cared for or needed to know was that he had a terrible enemy who, however, probably had his vulnerable point, and that the gain was so great if the battle were won that it was well worth while to devote his whole mind and his whole energies and his whole life to the solution of the problem.

And it was a great fight, not merely in studying the tactics of the enemy and in devising better and better means of preventing his access to the wounds and in counteracting the effects of his growth and multiplication, but also in overcoming great and unaccountable prejudice, ridicule, and obloquy. This fight was one which few could have carried out to its end, but Lister's profound conviction of the truth and value of what he was battling for—viz., the abolition of sepsis on the lines laid down in his writings—and of the enormous benefit to mankind if the problem were successfully solved, enabled him to put prejudice and ridicule aside and leave the verdict to the future. But he was much helped by a variety of circumstances.

He was mentally well fitted for the task which he had undertaken. He had one of the attributes of genius well developed—viz., that he did not overlook apparent minutiæ. Nor was he led away by the absurd copybook proverbs—"There are exceptions to every rule" and "The exception proves the rule." If he found an exception to a supposed rule he wanted to know why; he did not pass it over as if it were merely an exception and of no consequence. Pasteur had this faculty perhaps still more developed and Koch in a lesser degree,[4] and with all three some part of their success depended on the fact that they were not content to regard deviations from the ordinary course as trifling but wanted to know why these deviations occurred, and in doing so came across unexpected and helpful information.

Lister's Conscientiousness.

Further, Lister had a very logical brain and a very open mind, he was ready to modify his views and plans at once if proper evidence demanded it. He was full of sympathy for suffering and would devote himself to the relief of a patient without consideration of time. I think that probably his greatest characteristic was his conscientiousness. Before he took action on any point he turned the matter over and over in his mind so as to be as sure as possible that his action was right. His conscientiousness had a very curious result as regards his public appearances; indeed, he became rather notorious for being late when he had an important address to give, the reason being that on thinking over what he wished to say something was apt to occur to him at the last moment which he thought he ought to verify before he spoke. I remember when he gave the Bradshaw lecture here that the Council assembled, but there was no sign of the lecturer, and at last they filed into this room and took their places so as to calm the audience, but he was still missing. I was sitting on the back benches, and spying me, messengers were repeatedly sent up to me to ask what had happened to Lister and if he was coming; I could only say that I had left him at 3.30 and that he was then quite ready, but sure enough at the very last moment something struck him which he felt that he ought to look into before he came down.

I have been told that on one very important occasion, when he was giving an address on coagulation of the blood, an idea occurred to him in the carriage on his way to the lecture hall and that he turned into a butcher's and had an animal killed and the observation made before he went on to his lecture. And in his private practice I have known him to be an hour or two late for a consultation, and sometimes when he ought to have been at his house for his appointments he would look in at his nursing home in passing, and if anyone said that they did not feel quite comfortable he would take off his coat and readjust dressings or splints quite regardless of the fact that his waiting-room was full of irate doctors and patients vowing that they would never consult him again.

Family Influence.

But apart from his own endowments which he was constantly improving by hard work, he was one of a family of exceptionally able people. Especially did he owe much to the influence of his father, who was especially interested in optics, which were his chief hobby and recreation; indeed, it was he who developed the achromatic lens, and for his work in this direction he was elected a Fellow of the Royal Society. In Godlee's charming life of Lister he reproduces much correspondence which took place between father and son and which shows their great intimacy, the care with which he kept his father acquainted with all the work that he was doing, and the wise counsel which his father gave him.

And then the whole-hearted way in which his wife entered into all his work and acted as his intimate adviser and secretary was quite invaluable for Lister. Lady Lister was the eldest daughter of Mr. Syme and they were married in 1856. She was one of the most beautiful characters one can meet with and she was an ideal wife for Lister. A similar Lister Memorial Fund to this has recently been established in Canada, and the first Lister Memorial Oration was delivered last year by Dr. John Stewart, who was one of those who came with Lister to London in 1877 to help in organising the ward work. In his excellent address I find a few remarks about Lady Lister which I cannot refrain from reproducing here, and I am sure with Dr. Stewart's full approval. I assume that the words which I am going to quote were spoken at the wedding feast in a speech of congratulation to the newly-married couple by Dr. John Brown, author of "Rab and His Friends" among other essays, a well-known, learned, and much-beloved physician in Edinburgh. Dr. John Brown, in his remarks, referred to an illness which Lady Lister had suffered from when a little child and in which she had lain unconscious for several days. He spoke as follows: "Lister is one who, I believe, will go to the very top of his profession, and as for Agnes, she was once in Heaven for three or four days when she was a very little child and she had borne the mark of it ever since." Nothing more beautifully and more truly expressive of Lady Lister's character could be said than that. She was a true helpmate, spending hours with Lister, helping him in his scientific work, and taking notes for him; indeed, the notes of Lister's experiments which he has left behind him are for the most part in Lady Lister's handwriting.

Other Influences.

Apart from the above factors, Lister was much comforted by the approval and interest of men whose opinion he especially valued. In his early days two of his teachers at University College, London, had a great influence on him—viz., Prof. Sharpey, the physiologist, and Prof. Wharton Jones, the professor of ophthalmic surgery, but the man who had the greatest influence on him was Prof. Syme. Lister had the very highest opinion of Syme as a man and as a surgeon, and the fact that Syme approved of and latterly became enthusiastic about his work was an immense gratification and encouragement to him and enabled him to ignore the captious criticisms of his opponents.

And then lastly, and by no means least, he was much encouraged by the enthusiasm of his pupils. I do not know of anyone who excited such enthusiasm and had such influence over his students as Lister had, especially in Glasgow and Edinburgh.

METHODS EMPLOYED AND RESULTS OBTAINED.

I have now mentioned some of the chief influences which helped Lister to undertake and carry to success the battle against sepsis, and having waited long enough now for the case of compound fracture to turn up I may say something by way of example about the methods employed and the results obtained. I think that the way in which he commenced his campaign is most characteristic of his conscientiousness and care in all his work. Most men, I fancy, having arrived at the conclusions to which Lister had come would have been on tenterhooks to try the methods and would very likely have applied them to any case which seemed at all suitable, very possibly with disaster and disillusionment. But Lister had patience to wait till a suitable case for the experiment turned up, and I believe that during that time he was further planning out his campaign and also repeating some of Pasteur's experiments and devising some of his own.

His first case of compound fracture did not come under his care till March, 1865, but no details are given, and all that Lister says about it is that "it proved unsuccessful in consequence, as I now believe, of improper management."

I need not go into the 11 cases which he published in his first paper; the results presented a great contrast to those that he had been obtaining previously.[5] I may, however, mention one or two observations that he made on these early cases which were new to him and of the greatest interest and importance.

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[4] To change my metaphor for the moment the work of these three men was needed to construct the building properly, and Lister conceived and carried out its erection, Pasteur laid its foundations "well and truly," and Koch assisted very materially by his work on disinfection and also in clarifying the structural details by his first work on infective disease of wounds and no cultivation of bacteria on solid media.

In the first place, these cases gave him a high opinion of the value of carbolic acid for his work; indeed, it is very interesting that this substance, chosen more or less at haphazard, has turned out to be the most useful all-round antiseptic. The cases specially referred to are the second and fifth cases in his first publication. Put shortly, only two of the 11 cases developed phagedænic gangrene, a smaller proportion than usual, but the point that he makes is that in the one (No. 2) the disease developed after he had left off the use of the carbolic acid which he thought had done its work, and in the other (No. 5) it broke out at a small wound which had been overlooked and had not been treated with carbolic acid at all; it had spread from this little wound to the lower part of the bigger wound before it was noticed. In both cases recovery took place, but after a long struggle.

Healing by Blood Clot.

More important was the behaviour of blood clot in aseptic wounds; this was quite new to Lister. He mixed up carbolic acid with the blood and torn tissues and thus left a mass of coagulum and shreds of tissue in the wound, and several points quite new to him were observed. He noticed that the clot did not contract and break down as he was accustomed to see it do but remained firm and adherent to the sides of the wound.

That was the first fact; now for the second. On taking out a piece of the clot after some days and examining it under the microscope, he found that it contained numerous connective-tissue cells, some in bundles; later on blood-vessels began to develop. A third fact was that pieces of dead tissue mixed up with the clot also became infiltrated with these connective-tissue cells, so that not only did organisation occur in the dead clot but also in the more substantial pieces of dead tissue as the result of the penetration of these connective-tissue cells into them and the subsequent disappearance of the dead tissue. This last fact was what chiefly led Lister to take up his work on catgut and ligatures generally. And a fourth fact was that in some cases after two or three weeks one would find the edge of a thin layer of clot on the surface could be lifted up, and on doing so a layer of epithelium was disclosed spreading over the clot just below the surface and completing the process of cicatrisation.

These points constitute the process of healing by blood clot which we have taken advantage of ever since in cases where we could not conveniently bring the edges of the wound together. Curiously enough, this point seems to be lost sight of almost completely at the present time. The other day I picked up copies of four recently published books on general surgery and in only one of them was there any mention of organisation of blood clot. This is a pity, because it is a most useful thing, but for the reasons which I give towards the end of the appendix I doubt if exposed blood clot could be kept aseptic for a sufficient length of time to permit organisation where the technique of the surgeon excludes the use of chemical antiseptics.

Before passing on I may just call attention to the application of his method to an operation wound. As the case is referred to in the appendix I need not go into details here, but I may say that having squeezed out the pus from the abscess (it was a spinal abscess) he mixed it up with the carbolic acid to form a paste with which he dressed the wound. Just imagine the horror of the laboratory bacteriologist at such a suggestion at the present day! Nevertheless, when Lister came to dress the wound next day, prepared to make a paste in the same way as he did the day before, he was astonished to find that there was no more pus and that all that he could squeeze out of the wound was one or two drops of serum! The history of the case is that it remained aseptic and ultimately made a complete recovery.

LISTER'S CLINICAL LECTURES.

I may now pass on to the beginning of the session 1872-73, when I first became acquainted personally with these matters in a curious way that may interest you. I began the actual study of medicine in May, 1871, and devoted myself for the first 18 months to botany, natural history, and chemistry. In October, 1872, when I was in my second year, I took out the classes of surgery, physiology, and anatomy. There was an interval between the classes from 12 to 1 o'clock and I did not know what to do with myself during this interval. My lodgings were a considerable distance away and there was no object in walking there and back; what I wanted was shelter from the biting east winds and the wet. At that time there was no students' club at Edinburgh as there is now, and the only thing I could think of was to go and sit in the general library. But it was small and crowded with students of all faculties and there was no chance of a shy youth like myself getting a seat. So it occurred to me that I might as well take out my hospital ticket in October, 1872, as in the following May, which would be the usual time; in going round the hospital I might learn something, and anyway I would get shelter from the wintry blasts between noon and 1 o'clock.

I shall never forget the first day that I went to the hospital. At 12 o'clock I crossed the road to the infirmary and found crowds of students hurrying along the lobbies, a good many indeed running. I joined the company, full of curiosity, and found that we were going to Lister's clinical lecture. We ultimately reached the large operating theatre and found it filled with men crowding the gallery and standing at the back and in the gangways; there must have been over 200 there, and they were senior men, for the clinical surgery class was not usually attended till the fourth year. I should think that I was the only one of my year there. Presently a man walked into the arena, sat down on a chair placed on the floor of the theatre, and crossing his legs and putting his right hand on his thigh he began his lecture. This man was Lister. He had not spoken many minutes before I became fascinated with the subject and could not help seeing the wonderful era that was dawning for surgery. I had my notebooks for the other classes in my hand and I started to take down what he said, and as he spoke very slowly and clearly and I scribbled very quickly, I was able to take down practically the whole lecture, though, not having learnt any surgery, I did not understand it at all clearly at first. But what a contrast with the lectures on systematic surgery! Very dreary performances, full of curious theories about the reactions of the body and inflammation, quite unintelligible to me, evidently something which had to be memorised but nothing to think about. And then at 12 o'clock, simply seeking shelter from the "cauld blasts o' Auld Reekie," and not knowing that I had met my fate, I became entranced by the wonderful vision laid before us by Lister.

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[5] As a matter of fact, Lister overrated his first success because at that time he looked on the presence or absence of *putrefaction* as the criterion of failure or success—and most of the cases were free from *putrefaction*. It was not till later that he adopted *suppuration* as a truer criterion as regards sepsis, for septic diseases might develop in connexion with a wound that was suppurating but the discharge from which was not putrid. The absence of suppuration is a much more useful test of asepsis than the absence of putrefaction. Even the absence of suppuration may theoretically not be an absolutely true guide, for cases of erysipelas occur without suppuration, and it is conceivable that tetanus might do so also. But taken as a whole the presence or absence of suppuration is quite satisfactory as a test of failure or success as regards asepsis. On this criterion I find that five of the 11 cases in Lister's first paper were typically aseptic cases, five were septic, and in one the sepsis seems to have been very slight indeed. Surely that is a very remarkable result for a first attempt in cases where it must always be a matter of doubt whether one has satisfactorily disinfected every recess of the wound or not. I have no hesitation in saying that up to that time Lister had never seen five cases out of 11 running an aseptic course, indeed I doubt if he had ever seen one. As to mortality, of these 11 cases only one died (from *perforation of the popliteal artery by a spicule of bone on which it rested*, 3½ months after the injury), a mortality of 9 per cent., a very low mortality as cases went at that time.

Is it any wonder that I left the theatre an enthusiast for the profession that I had chosen, and that on lecture days I was one of those who ran? An enthusiast I still remain. On my way home that first afternoon I bought a superior notebook into which, as soon as I got home, I copied out my notes of Lister's lecture and all that I could remember, looking up the words I could not understand in my text-book on surgery. This I continued to do after every lecture, and this notebook, containing Lister's lectures for the winter session 1872–73 and part of the following summer session, I have presented to this College, and it will be found with the Lister relics if anyone cares to look at them.[6]

I always consider that it was a lucky thing for me that there was no students' club at the university in my time, for had it existed I would most probably have gone there for this vacant hour, and possibly learned billiards, but I would not have attracted Lister's notice, and I would not have been delivering this lecture here to-day. These comforts, especially for young people, are not always for the best. I am not at all sure that the youth of the present day do not have things made too comfortable and attractive for them, for this is apt to take away some of the incentive which is very necessary for hard work.

RIVALRY BETWEEN LISTERIANS AND NON-LISTERIANS.

At that time, and till Lister left Edinburgh, the rivalry among the students—between Lister's followers and those who continued the old system—was very marked. The Listerians, who were considerably the more numerous, looked on the non-Listerians as lost souls, Tories of the most die-hard description, and not likely, when they came to practise their profession, to be able to give their patients the best chance possible. The non-Listerians, on the other hand, looked on the others as crazy believers in vain things like germs, rash to a degree, blinded with their enthusiasm, placing their patients in the greatest danger by the outrageous treatment that they proposed, and, as they said that their wounds did not suppurate while those of the other side did, liars of the first water. This rivalry increased for a considerable time, and when I became Lister's house surgeon in Edinburgh in 1876–77 it was probably at its height. It was, I believe, of the greatest value to the cause of asepsis. It made us all extremely careful, because we knew that everything we did was closely watched and no excuses would be accepted if a case went wrong; it would be the principle that would be blamed and not the individual. By this time the antiseptic treatment had reached a stage where we felt that suppuration should not occur in an operation wound made through unbroken skin; if it did occur—and as we were not perfect, one or two cases would suppurate during the six months' session—we all felt it very much; we went about as if everything were lost, ashamed to raise our heads and subjected to merciless chaff. Our only topic of conversation among ourselves on such occasions was how the infection had got in, what was the error in technique which had been committed, and whose fault it was; most excellent training and never forgotten; nothing could make us more careful than to be made to feel that suppuration in an operation wound was due to some error in our technique and was a serious reflection on the surgeon or the dresser. And I do not hesitate to say that I still agree with this axiom, and that in my opinion it holds true at the present time just as much as it did in the old days.[7]

LISTER'S METHODS STUDIED BY DISTINGUISHED FOREIGNERS.

By this time (1872 onwards) Lister's work had attracted more and more attention and quite a number of surgeons began to visit Lister's wards. Curiously enough, very few British surgeons were to be seen, but other countries were well represented, especially Germany. Lister made a special point of showing all his methods and results to the visitors, and as there were constantly fresh arrivals he had to repeat his story frequently; thus his hospital visits were somewhat prolonged. In the early days to which I specially allude the steam spray had not yet been introduced and it was very hard work to keep a hand spray going for any considerable time. The dressing of a patient followed a regular routine, the dresser on duty got on his knees at the side of the bed and as soon as the bandages had been cut he started his hand spray. Lister then lifted off the outer dressing, which was solemnly handed round to each distinguished foreigner to smell. Having satisfied themselves that there was no putrefaction the deeper piece of gauze which was generally placed over the region of the wound was passed round to show that there was no pus, and then in cases where it had not been possible to bring the edges of the wound completely together and where blood-clot could be seen in places between the edges of the incision came the *pièce de résistance*. In such cases Lister usually covered the wound with a piece of material which was impermeable to carbolic acid and which he called "protective," and when this was exposed he would take a pair of forceps and peel off the protective exposing the wound with the adherent organising blood-clot lying in the spaces where the edges had not come together, solid and firm, and with no sign of inflammation or suppuration in the wound. As a rule, this was followed by a sort of gasp of surprise by the distinguished foreigners, and then a violent conversation would break out among them accompanied by equally violent gesticulations so that one became alarmed lest the peace of the nations was going to be endangered. The poor dresser, who was almost, and indeed sometimes actually, faint from the pumping of the spray, was for the time being completely forgotten. But however exhausted he was, and however much his wrist and arm ached, not one of his dressers would give in and let Lister down.

NEW OPERATIONS AND NEW LINES OF TREATMENT.

I have described in the appendix the stage which the methods of treatment had reached by this time, and for some years Lister was probably most interested in revising the operative treatment of every disease or injury that presented itself from the point of view that he need not now fear sepsis in the operation wound. I have also referred in the appendix to the first case of badly united fracture at the ankle-joint which he rectified by open operation, opening the ankle-joint freely. At first he did more bone work than anything else, ununited fractures, badly united fractures, deformities of bone (he was the first to operate for knock-knee, very much on the lines of operation devised by Sir William Macewen some time later), wiring or pegging recent fractures—e.g., fractures of the patella or olecranon, operations for varicose veins, open radical cure of hernia, extensive operations for cancer of the breast, and so on. He was the first to resuscitate suprapubic lithotomy, though this is generally attributed to others. In fact, his remarks on this matter will be found in my note-book, where you will see his reasons for this suggestion, but he was not very happy in their practical application.

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[6] In his lectures Lister tried to show and discuss examples of as many different surgical diseases (even the simplest) as came to his clinic, so that in the course of the session the students had seen a considerable variety, especially of the ordinary cases which turn up in private practice. In my notebook we find among other things spinal caries, varicocele (with operation), epulis, spina bifida treated by drainage, suprapubic lithotomy (probably the first case performed for many years), excision of [illegible]w, simple fracture, burns, ununited fractures with operation, [illegible]ure of œsophagus, stricture of the urethra, malignant [illegible] of jaw, nævus, hypospadias, cancrum oris, fistula in ano, [illegible] hernia, &c.

[7] Not long ago I came across the following very suggestive passage in a paper by Dr. Thomas Keith, one of the great pioneer ovariotomists, on Ovariotomy Before and After Antiseptics (Brit. Med. Jour., October, 1878): "The regulations made in some hospitals that every visitor must sign his name in a book declaring that he has not for a week visited any case of infectious disease or attended a post-mortem examination, before being admitted into the operating-room, has always seemed to me to be meant for a sort of *plaisanterie*. For my own part, when a case goes wrong after an operation, I have seldom to look far beyond myself for the cause of failure—something done, something not done. This is a lesson hard to learn; we blame persons, things, accidents, and circumstances rather than ourselves.

About this time (1873 onwards) Lister's activities followed two great directions, which are both traced out in the appendix. In the first place, he continued his efforts to find fresh antiseptics which might be less irritating and more useful than those which he had hitherto employed, and he spent a great deal of time in testing various substances which were brought to his notice; and the other line of activity which he followed was to reconsider the treatment of all sorts of cases which came before him from the point of view of whether something better might not be done for them by operation than was being done at that time, founded on the knowledge that sepsis might be reckoned to have now been entirely abolished from wounds made by the surgeon through unbroken skin. It was probably in that direction more than in any other that Lister's work became so intensely interesting to the students. They would come to his wards and see treatment employed which had apparently never been heard of, or thought of, by the other surgeons who did not employ antiseptic measures. It would be hopeless to attempt to give any sort of list of the new operations which Lister did, and he himself absolutely declined to publish them.

When I became more intimately associated with Lister I made repeated requests to be allowed to publish notes of his clinic, especially of the new operations and new lines of treatment which he was employing, but although he had done that sort of thing for Mr. Syme, he pointed out, quite correctly, that the matter was very different, and that if such cases as opening joints, complicated operations on bones, and many others that might be mentioned, were published and shown to have much benefited the patients, it might quite well happen that some surgeon who was not a believer in antiseptic treatment, or who was not sufficiently acquainted with the technique, might proceed to perform an operation on similar lines, and being without the protection of antiseptics the patient might lose his life or limb as a consequence. That is the explanation why so little is known of Lister as a surgeon. But, as I said before, I think that it was his fresh outlook on treatment and the interest of speculating what fresh procedure Lister would suggest in a particular case that fascinated the students most. The only sphere of operative work in which he did very little was abdominal surgery. Indeed, with the exception of ovariotomy, which was, curiously enough, supposed to be a very difficult operation and one sacred to a few specially gifted men, comparatively little work had been done in abdominal surgery as we now know it before Lister retired from practice, and he openly stated that he did not feel justified in embarking on surgery in a region with which he was not thoroughly familiar.

ENTHUSIASM ABROAD.—MIGRATION TO LONDON.

I became Lister's house surgeon in Edinburgh in October, 1876, having spent the greater part of a year in Vienna and Strasburg, and I may say that in my visit abroad I found the greatest enthusiasm over Lister and his work. Indeed, the fact that I had worked in his wards and was going to be his house surgeon on my return to Scotland was a sort of open sesame, and one of the professors actually asked me to come and show him exactly how Lister dealt with his cases.

It was in the spring of 1877 that Lister received and ultimately accepted an invitation to go to London as professor of clinical surgery at King's College conjointly with Mr. John Wood. The first that I heard of it was one Sunday morning, I think a day or two after he received the invitation, when I was sleeping quietly in the house surgeon's bedroom. I woke up to find someone shaking me, and to my astonishment on opening my eyes I found that it was Lister. He told me about his invitation to London. He had not yet at all made up his mind about it, but he said that if he went he would need to take a small staff with him familiar with his methods and he had come down that morning to know whether if he decided to go I would go with him and again act as his house surgeon for six months at King's College Hospital. Go with Lister to London! I could not believe my ears! Of course I would go with him to London or anywhere else. One would have thought that he was asking me to do him a great favour instead of giving me the chance of a lifetime. In addition he took Dr. John Stewart (now one of the leading surgeons in Canada and held in very great esteem there), Dr. W. H. Dobie, of Chester (in large practice there), and Dr. Altham (who died soon afterwards) as clerks.

Whether Lister was wise in leaving Edinburgh is still open to question, but his decision to go to London was most characteristic of the man. It was merely a question of suffering humanity. His methods and views were spreading very slowly in this country, and after long consideration it seemed to him that they might be sooner adopted if he were in the great centre. But his heart was in Edinburgh where he had everything that he could desire—many devoted friends, delightful society, enthusiastic and large classes, and a large surgical clinique, but where, as he thought, humanity called him he did not hesitate to place the call of duty above the call of pleasure.

He arranged to begin his work there at the beginning of the winter session in October, 1877, and he was asked to give the address at the opening of the winter session. At that time he had become very interested in the question as to whether there were different "species" of bacteria each with its own actions, whether on fermentescible substances or in connexion with diseases, and he looked on this as a very important matter. He had already been working with milk, and he decided to investigate the lactic fermentation of milk, which he did during the summer and autumn of 1877. He satisfied himself by many ingenious experiments that a small bacillus, to which he gave the name of *Bacillus lactis*, was the only cause of the lactic fermentation of milk, and that that was its sole external function in the scheme of Nature. The research was carried out with the precision and thoroughness which characterised all Lister's work. He not unnaturally thought that the absolute demonstration of a specific bacterium, explaining much that was obscure at that time, would be of the highest interest to his audience. Large numbers of the leading surgeons in London and the provinces came to hear this lecture. Perhaps, not unnaturally, they expected to be told about the revolution in surgery which Lister had inaugurated, and instead they had to sit for an hour listening to details of a series of experiments which proved that the lactic fermentation of milk was due to a particular bacterium! The expression on the faces of the audience was very interesting and rather amusing; the majority of the surgeons present could not understand what the lactic fermentation of milk had to do with surgery. Those were the days of the "practical surgeon" as opposed to the "scientific surgeon," the latter being supposed (why I cannot imagine) to have no practical skill or knowledge. It took a considerable time before the "practical surgeon" realised that his day was past.

LISTER'S VIEWS UNFAVOURABLY RECEIVED.

When we arrived in London, as far as I can remember, no one at King's College was doing anything specially in the direction of antiseptic work, and, indeed, only a very few surgeons in London. As regards Lister's lectures, the chief thing that struck us at once was the almost entire want of enthusiasm among the students as compared with Edinburgh; there was no crowd running to get a good seat. Apart from Lister's dressers, only a few students would stroll into the theatre quite casually, apparently taking little interest in the lecture and seldom taking any notes. After the enormous classes in Edinburgh and their great enthusiasm it was very disappointing and depressing. We found after a time that probably the main cause of this was that the examiners in surgery for the various diplomas and degrees were for the most part not favourable to Lister's views, and the students were therefore afraid to attend Lister's lectures in case they should by accident give his views to the examiner. A good many of them, however, planned to stay in town for some time after they qualified so as to see something of Lister's work. This state of matters continued for some time, but gradually died away.

Lister was quite well received by the staff and the students, but the nursing department was very difficult to work with. The hospital was at that time nursed by a sisterhood who looked on the wards as their private rooms, into which no man should come without their permission, nor should he interfere with any of their arrangements such as ventilation, &c. They could always produce a rule of their sisterhood why we should not do this or the other thing which we considered essential for the success of our work. Had we not possessed a keen sense of humour (being more or less of Scottish descent), I do not know how we could have got through, but most of the restrictions were so childish and so evidently invented on the spur of the moment that we could not but laugh at them. I believe the real trouble was that till we appeared on the scene the nurses dressed the wounds, but when Lister arrived he naturally would not allow them to meddle with the dressings; this solution did not occur to me for some considerable time.

The staff, on the other hand, were quite cordial and interested. Not long after we arrived one of the surgeons was going to amputate a limb, and he asked me to come and look after the antiseptic arrangements. His technique was pretty defective, and he did not seem able to visualise the germs which were ready to seize every opportunity of getting into the wound, so I accidentally from time to time squeezed a quantity of carbolic lotion over his hands, for which I was, of course, very apologetic. He did everything that I suggested till it came to tying the vessels, for which he used silk and left the ends long. I begged him repeatedly to cut them short and told him that they would never separate if the wound remained aseptic, but he was adamant; he had never seen a case where the ligature could not be pulled out after a few days and he was not going to carry out such stupid advice as to cut them short. The wound healed by first intention except where the bunch of ligatures was, and no suppuration occurred. Day after day I dressed the case for him and he pulled the threads without success. Gradually he began to think that I had told him the truth, and ultimately I got him to pull the threads as far down as he could and cut them off as high up as possible. This he did, and fortunately, as I had taken special pains to keep everything aseptic, no infection took place and that end of the wound was healed in a few days and no further trouble resulted.

DISCOVERY OF AN UNIRRITATING ANTISEPTIC.

time of the migration to London we were carbolic gauze, carbolic spray, and carbolic although thymol, eucalyptus, and various septics were tried during the next four or five years no real progress was made in the way of substitution of antiseptics till after the publication of Koch's work on antiseptics. After that Lister took up various mercurial preparations, and a variety of gauzes impregnated with preparations of mercury were employed which had all to be discarded after a time on account of irritation of the skin. Ultimately Lister examined a double cyanide of mercury and zinc and this was found to be unirritating, being insoluble in water. But it was effective as an agent to inhibit the development of bacteria though possibly not to destroy them. It was soluble in the mixture of serum and blood which came from the wound in sufficient amount to render it an unfit soil for the growth of bacteria. This we have used ever since with quite satisfactory results, and I believe that it just fills up the loophole which is left where dressings which are simply sterilised but do not contain any antiseptic are employed. Where a large amount of discharge is expected I generally reinforce the cyanide dressing by a mass of salicylic wool placed outside it. As to these gauzes and wool, it must be remembered that though they contain antiseptics they must be sterilised in the autoclave also, because the antiseptics are not volatile so that bacteria which may lodge in the dressing are not acted on by the antiseptic. The diluted lotions of bichloride of mercury and of biniodide of mercury (1–2000 and 1–4000) were also largely substituted for carbolic acid, the carbolic spray having been given up in 1887.

LISTER'S ACTIVE WORK ENDED.

Lister's active work in connexion with surgery came to an end about 1893. The death of Lady Lister in the spring of that year, followed soon after by his retirement from the hospital on account of the age-limit, removing at the same time his much-beloved companion and fellow-worker for many years and the opportunity of pursuing his work at the hospital, broke him down and changed entirely the current of his life. But by that time general septic diseases had become practically unknown in his practice in so far as operations through unbroken skin were concerned, and suppuration, even of the mildest type, was an occurrence of extreme rarity, and the possibility of septic complications was quite negligible. He had also reached a point in his technique where the possible irritation caused by the antiseptics employed was not noticeable and did not interfere at all with the healing of the wounds. In 1895 Lister was elected President of the Royal Society, and the work connected with that Society gave him another five years of life. But after that, although honours continued to be showered upon him, the great brain became tired, his memory failed, and he began to long for the time to come when, as he firmly believed, he would meet his wife and his friends again and commence a new life.

THE LATE DR. A. CHRISTY WILSON.—Alexander Christy Wilson, M.D. Edin., the oldest medical practitioner in Doncaster, died on April 27th, in his eightieth year, after an illness of several months' duration. A native of Hawick, he studied at the University of Edinburgh, where he graduated M.B. and C.M. in 1867, having previously in 1866 obtained the L.R.C.S. Edin. While at the University he was a President of the Royal Medical Society of Edinburgh. In 1870 he took the degree of M.D., having in the meantime visited the hospitals in Paris. Settling in Doncaster 55 years ago, he soon established himself in the town. For over 40 years Dr. Wilson was an honorary surgeon at the Doncaster Royal Infirmary, and on his retirement from active surgical duty he became its senior consulting surgeon. He was a past President of the Yorkshire branch of the British Medical Association, and also of the Leeds and West Riding Medico-Chirurgical Society. Dr. Wilson took an active part in all philanthropic movements in the town, and was a warden of St. James's Church. In August, 1923, Dr. and Mrs. Wilson celebrated their golden wedding, and Mrs. Wilson survives her husband. Two sons are in the medical profession. Dr. Wilson contributed papers on abdominal surgery to *The Lancet* and the *British Medical Journal*.

Croonian Lectures

ON THE

RÔLE OF FATS IN VITAL PHENOMENA.

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LECTURE IV.[*]

IN the first of these lectures an attempt was made to review the ideas that are current with regard to the part played by fats in the structure and life of cells. Confusion, conflict, and nothing but what was unsatisfactory could be found in them. Then certain facts were described of which as yet cytologists have made little use. Some of these facts are capable of being much more clearly defined than they yet are, but are then, it was suggested, likely to contribute something, possibly much, to the formation of clearer ideas. Briefly the facts are these. Simple fats, triglycerides, have some 50 paraffin carbon atoms, arranged in three parallel rows, for six to which some hydrophile properties have to be assigned. It is these latter that enable fats to form films on water which paraffins cannot. Lecithine, with perhaps 34 paraffin carbon atoms, in two rows, attached to a much larger hydrophile group, presents in this group, in addition to the glyceryl ester arrangement of the simple fat, a free phosphoric acid hydroxyl and a free basic hydroxyl in choline. It has thus 30 per cent. less of the paraffin and an incalculably greater hydrophile component. It is still insoluble in water, but in contact with water behaves totally differently from simple fats, in such a way that ideal equilibrium would appear to be unattainable until the lecithine molecules were arranged in films two molecules thick with the hydrophile groups facing the water on each surface. Against the attainment of such an ideal equilibrium many intercurrent tendencies must operate; the presence of other substances in the aqueous phase, as well as the admixture of other lipines and of cholesterol with the lecithine, is bound to introduce complications. Indications indeed of the influence of cholesterol have been obtained already in what makes no claim to being more than a tentative exploration of the subject. Many attempts, which have not been referred to, have been made to pick up clues as to the influence of other substances in both phases, but many more remain to be made. Nor can it be claimed that as yet any serious call on technical ingenuity has been made in the pursuit of the inquiry. An attractive prospectus could be composed.

At any rate we cannot be satisfied merely with the two ideas as to the state of fat in cells, which are all that is usually offered, an emulsion of oil in water, with possibly an aggregation of fat at the cell surface. With these alone no sense can be made of the diphasic cell systems. It would be blasphemy to suppose that it could. Such complacent irreverence in the contemplation of the supreme mystery of the structure of living protoplasm would be unphysiological, unscientific.

IS THERE STRUCTURE IN PROTOPLASM?

In what sense is it possible to speak of structure in protoplasm? Much of what used to pass as evidence for such structure has been shown, notably by Hardy, to be fallacious. The fixatives used in histology produce similar appearances in colloidal solutions of mere common proteins. The intriguing networks and fibrils have gone; the Nissl granules have melted away. Were it not for the solid work in the micro-dissections of American cytologists, Barber, Kite, Chambers,[1] and others, who knows whether our faith in the reality of mitotic figures or even the nucleus were not in danger?

Liquidity of Protoplasm.

Protoplasm is liquid. Reaffirmation of this fact, which has sometimes been lost sight of, is now rightly held to be necessary. Much of the evidence on which it rests has long been available, much more has come to light in modern investigations. By exposing cells, especially egg cells, to centrifugal action Lyon (1907)[2] showed that their contents take up new positions, determined apparently solely by exaggeration of the force of gravity. Oil globules appear confined to one end; pigment granules and other inclusions congregate at the other; between the two is a clear hyaline zone, in which the nucleus lies near the oil globules, while at the edge of the opposite granular zone the smallest of the granules can be seen in active Brownian movement. Brownian movement, it is well known, is frequently observed in cell protoplasm, including that of nerve cells (Marinesco[3]). It stops when the cell dies, but also at other times during the normal life of the cell. In addition to the evidence from Brownian movement there is that which can be derived from the observations of streaming movements in protoplasm, some of which date back to the days of Corti and Treviranus. Among the most striking of these observations are still those of Arthur Lister[4] (1888) on the rhythmically reversed flow of granules in the protoplasm of mycetozoal syncytia, for some seconds first in one direction, then slowing down, stopping, and starting again in the other, and so repeated indefinitely. Such syncytia, too, he observed as he made them creep through a cotton-wool filter in which the ingested vegetable spores were found to have been strained off as the organism emerged clear as water on the other side. What kind of structure can such protoplasm have? Similar to these are the descriptions of streaming movements in the pseudopodia of amœbæ, towards the apex of the pseudopod in its axis, in the opposite direction on its surface; these movements Chambers (1920) was able to modify by injecting fluids into the cell; he speaks of them as "depending upon a delicate balance of liquefying and solidifying tendencies in its protoplasm." Currents have been described also in the dividing egg, in nerve cells, in epithelium, and in cells of the pancreas; in fact, new observations of this phenomenon are continually being added to the old ones. That protoplasm is liquid is again argued from the fact that included drops of liquid are not prevented by any rigid structure of the surrounding protoplasm from taking up the spherical shape that would be given to them by their own surface-tension. Carlson,[5] too, measured the time taken for an impulse to travel in a certain nerve of the slug, when the animal's body was contracted and when it was extended. The result showed that the nerve elongates and does not merely uncoil itself as the animal is elongated. The consistency of the nerve fibre must be much more fluid than probably had been commonly supposed.

VISCOSITY OF CELL SUBSTANCE.

But if protoplasm is liquid how can it have structure? Going back again to the earliest descriptions of cell substance, it is familiar that it was spoken of as a sticky, viscous fluid. In modern investigations the viscosity of protoplasm has received much attention. Cell protoplasm will adhere to a micro-dissection needle and can be drawn out in a long strand, which may become detached from the cell, or if released is retracted. In either case the original appearance of the cell may be restored. An amœboid cell may adhere to the surface over which it is moving, so that portions become detached and are left behind as the cell moves on. Some cells like the motor nerve cells in the frog are so tough that it is difficult to dissect them at all; others like those of the pancreas break up if merely pricked. The viscosity of cell substance is known to vary significantly at different times in the life of the cell. These variations have been studied by the effect of centrifugal action. The viscosity of the egg protoplasm has thus been shown to be increased after fertilisation (Heilbrunn,[6] Odquist[7]). If an egg of which the contents have been stratified by centrifugal force is then fertilised, no Brownian movement is observed till shortly before division, when it starts at the region where a few seconds later the cleavage furrow begins to appear. By micro-dissection these viscosity changes in the recently fertilised egg have been studied in greater detail. It is high in the radially marked cytoplasm round the clear centrosphere, high when the chromosomes are arranged about the equator; but when they have separated and the amphiaster is formed the viscosity of the equatorial region is low, and a needle can move about in it much more freely than in the cytoplasm elsewhere. In some cells the cytoplasm can be stripped off the spindle and the bare spindle retain its shape. But with two needles it can be stretched, the chromosomes stretching with it, the whole when released returning to the original shape. In some cases the disposition of the parts of a mitotic cell can be visibly changed by mechanical disturbance, the rays of an aster deflected or even made to disappear, and then when left to themselves they may reform, recover themselves, and division proceed apparently normally;. as though protoplasm were not only viscous, but elastic in its viscosity because its viscosity depends on a persistent tendency in its components to arrange themselves in it according to an ordered plan. In other cases mechanical disturbance of one part of a cell may result in disintegration that spreads sometimes rapidly to other parts, the integrity of the whole being dependent upon the integrity of the part.

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[*] Lectures I., II., and III. appeared in THE LANCET of April 18th and 25th and May 9th respectively.

Bayliss[8] described the cessation of Brownian movement of ultra-microscopic particles in the pseudopodia of amœbæ as a result of brief weak electrical stimulation, and how under favourable conditions the effect would pass off and the movement begin again. Such disturbances as are called stimuli may therefore bring about visible changes in viscosity.

Cause of Viscosity of Cell Substance.

The viscosity of cell substance is commonly ascribed to the proteins that it contains. Some colloidal solutions, those of metals or their sulphides for instance, are hardly more viscous than pure water. Considerable amounts of finely divided solids may be suspended in water without its becoming viscous. But while a solution of egg albumin containing 13 per cent., about the amount in white of egg, has double the viscosity of water, one of little more than double that strength is ten times as viscous as water. Other proteins that have been investigated give much more viscous solutions than egg albumin, euglobulin in 13 per cent. solution, for instance, has a viscosity nearly 30 times as great as water, and sodium caseinogenate in still lower concentration the same (H. Chick, 1911).[9]

From facts such as these it is argued that the colloidal particles in a protein solution are not solid. That they are not solid as particles of gold are must be granted, if it is felt necessary to prove that. But when the argument proceeds thus: emulsions, suspensions, that is, of spherical liquid drops in an immiscible liquid, have in certain conditions a high viscosity; therefore the high viscosity of protein solutions must be accounted for similarly; and the particles of protein, since they are not solid as metals are, must be liquid, immiscible with water, and by implication spherical drops, are we bound to follow this argument step by step and accept it all as logically necessary? It must be admitted it is not customary to set the argument out as categorically as this. All that is usually done is to call colloidal solutions such as those of proteins "emulsoid," and leave it at that. An emulsion is something we can understand; a system of two immiscible liquids, one suspended as spherical drops dispersed through the other; where one liquid begins the other ends, and there is a definite interface between the two at which substances dissolved in either may tend to accumulate. What is an emulsoid solution? It is very well to say that the particles of the solute contain some of the liquid, and the surrounding liquid some of the solute in true solution, but in what sense is such a system like an emulsion? Are there two liquids? Is one of them dispersed in spherical drops? Where one begins does the other end? Can we say there is an interface between the two and that all that would follow from that is to be implied? No indication is given as to whether the answer to these questions is affirmative or negative. I venture to think it should in each case be negative. If so, in what sense are such solutions like emulsions? The term emulsoid is merely suggestively misleading; it is not happy; in scientific terminology words ending in "oid" seldom are.

Structure of Protein Molecule.

In endeavouring to understand the viscosity of protein solutions and its bearing on the structure of protoplasm it may be well to think of the stereochemical configuration of a protein molecule. Such a molecule is a chain of amino-acids; in this chain each amino-acid must tend to be set at a certain angle to the one next to it, the angle being determined by the directional forces between the atoms concerned in the linkage, and also probably by attractions and repulsions between neighbouring polar groups. The whole molecule will thus tend to assume, if free to do so, a certain disposition in space of a very complex sinuous pattern. It must be remembered that what are called "straight" chains of carbon atoms in chemistry are certainly not straight; and that the number of amino-acid chains in a gelatin molecule is more than 100, in hæmoglobin nearer 200, containing many ring formations as well as "straight" chains. This pattern, when the protein is in the dry state, cannot be preserved; the molecules are crumpled up and unfold only in solution, if, indeed, having once been dried they can again be disentangled. Dry gelatin expanding in very dilute hydrochloric acid may take up 70 times its weight of water (D. Jordan Lloyd).[10] A coherent gel may be obtained from a solution of gelatin on cooling to 8° C. when the gelatin is only 0·2 per cent., when, that is, the space occupied by the water in the jelly is 500 times as great as that actually occupied by the gelatin (Rohloff and Shinjo).[11] In a gel formed on cooling a solution the gelatin molecules clearly must link up to each other so as to form a complicated meshwork in three dimensions, in which the communicating interstices filled by water far exceed in volume the space actually occupied by the gelatin molecule. This linking of gelatin molecules is, however, not strong enough to stand more than a certain intensity of kinetic activity in the permeating liquid. As this activity increases with rising temperature the linkages are loosened, not everywhere at once, but gradually. At the same time the initial high viscosity diminishes, at first rapidly, then more slowly, till the molecules are not allowed to remain linked up at all. Arisz[12] measured in a 10 per cent. solution of gelatin, which solidified at 11° C., a viscosity at 16° 50 times, at 17° 12 times, at 55° four times, and at 65° twice as great as that of water. The viscosity is a measure of the effective operation of forces that tend to link the molecules together, their stickiness. Something similar seems to be implied in the conception of any emulsoid colloidal solution of a protein with its comparatively high viscosity; the aggregates of protein molecules must arise from the tendency of molecules to cohere, and the aggregates tend to be linked together by the free molecules dissolved in the surrounding fluid, sufficiently at least to diminish the fluidity of the system.

The viscosity of the cell substance may be accounted for in the same way. Indeed, the fact that liquid protoplasm can enclose spherical drops or vacuoles, if it proves that protoplasm has not the rigidity to prevent the shape of the drops being determined by their surface tension, mark the word, and therefore that protoplasm is liquid, proves no less surely that there must be cohesion between the molecules and aggregates of molecules composing the colloidal protoplasmic solution, sufficient to prevent these molecules from being scattered by the kinetic activity of the water molecules among which they float, sufficient, too, to set a limit to the amount of water which they can enclose. Protoplasm is not miscible with water till it disintegrates, because, though liquid, it has structure.

Cell Proteins Unobtainable.

In some of the earliest descriptions of cell protoplasm it was spoken of as a jelly; more recent studies, including those referred to above, lead to the idea of a viscous fluid, the viscosity of which can vary. In any case it would be a mistake to argue from what is known of the behaviour of one kind of protein as to the behaviour of another. No cell protein has been studied as casein, gelatin, egg albumin, or the serum proteins have. Cell proteins cannot be obtained. But the proteins that have been studied behave so differently from each other that it is impossible to predict which of them, if any, a particular cell protein will resemble. They are alike only, it may perhaps be safe to say, in that when in solution they give colloidal solutions which in certain circumstances and concentrations have high viscosity.

If the way in which I picture protein molecules in protoplasm is justifiable, as floated out in the water of the cell, cell proteins may well be thought of as unobtainable. They are put together, they grow, where they live, expanded as the floating vegetation of the sea; expanded and yet not always necessarily to the same degree; for the disposition of the parts of the pattern must be capable of change according to whether the polar points are unrestrictedly free to act on each other, or are engaged by foreign molecules or ions that come their way. A globulin is insoluble, does not expand, except when certain ions are available. The idea of attempting to collect the proteins from some millions of cells without change may be as unpractical as it would be to collect a handful of gossamer webs in order to study the way in which they were put together. It is impossible to dispute the evidence for structure in protoplasm, while at the same time it is impossible to deny it at all times fluidity. Structure in liquids must appear as one of those incomprehensibles of which the great physician exhorted us to have a glimpse, "things that thought doth but tenderly touch"; but it is not merely an idea, it is a reality that must be apprehended. Liquid crystals are formed not only by derivatives of cholesterol, but also by many substances of known chemical constitution, azoxyanisol, ethyl azoxybenzoate, esters of p.-azoxycinnamic acid, and many others; and the viscosity of some of the melted substances has been measured in the isotropic condition and found to change as the crystals form.

The Permeability of Cells.

The question, then, is how far will such ideas of protein solutions as we can form serve to account for the properties of protoplasm. The aggregates of molecules that constitute the colloidal particles in protein solutions are, it is commonly agreed, like sponges, full of water. Most cells, but not all, are in most circumstances permeable to water: the cells that line the stomach are not, at least water is not absorbed there as it is beyond the pylorus, cutaneous epithelium cells let no water through, nor do the cells that line the bladder and ureter, neither when the osmotic pressure of the urine is one quarter nor when it is four times as great as that of the blood; and however it may be with keratinous squamous epithelium, the surface cells of transitional epithelium are clearly living nucleated cells composed of protoplasm. According to Hamburger[12] even some few red blood corpuscles are found intact after diluting blood with much water; and when treated with cobra venom this property becomes general. Lillie describes sea-urchin eggs impermeable to distilled water until traces of calcium are added. In general, however, it may be said that protoplasm, even its surface layers, are permeable to water; Heilbrunn[4] has shown that as a cell swells in hypotonic solution the viscosity of the protoplasm diminishes, as it shrinks in a hypertonic one the viscosity increases. Disregarding, therefore, for the moment exceptional cases, important though they may be, the general permeability of cells to water is what might be expected if they were composed merely of colloidal proteins. But in the known properties of common proteins there is little to warrant our ascribing to the proteins that protoplasm contains, and to them alone, all the phenomena of impermeability to other substances than water which it manifests, unless it be in the case of substances in colloidal solution. Fibrin clot and casein curd cannot even hold back the proteins of serum and whey. A jelly of gelatin, though unlike these it is impermeable to colloids, has since the days of Graham been known to allow rapid diffusion of salts, and when used in ultra-filtration lets, as far as is known, everything but colloids through. Gels are permeable to common salts: that does not mean, of course, that they offer no obstacle at all to their passage. The very viscosity of mere solutions of proteins shows that in such solutions the freedom of movement of even water molecules is impaired. The greater the concentration of the gelatin in a jelly the more this freedom is restricted. It is practically impossible to disentangle the last traces even of water from gelatin. The freedom of movement of molecules of salts must be still more restricted. It is known that the diffusion of salts in concentrated gelatin jellies is considerably impeded, and that of different salts in different degrees—e.g., sulphates more than chlorides. The salting out of proteins is most easily understood in this way. The water can get free from the meshes of the protein molecules more easily than the salts can diffuse in, the more so the more the expanded protein molecules contract as the water escapes. The enormous pressures necessary in ultra-filtration through gelatin filters also bear witness to the obstruction that protein molecules when closely packed offer to the movement of salts. But it is quite another matter to ascribe all the semi-permeability of the cell to such protein structures as the dimensions of cells allow. If a jelly permits the diffusion of salts we have no right to suppose that the molecular aggregates in the viscous colloidal solution of gelatin or other protein do not.

But there is no characteristic of cell protoplasm that is more fundamental, none more essential to the performance of its functions, than selective semipermeability capable of variation. When we understand how this is brought about, in all the degrees in which it can in different conditions be observed, there will be no mystery in secretion, nor in absorption, probably none in the activities of muscles and of nerve cells.

Nor can we escape by supposing this semipermeability to be the property only of a mysterious surface layer, while the rest of the cell behaves as if merely a colloidal protein solution. It is true that Chambers has in his fascinating work carried out the delicate operation of injecting solutions into starfish eggs through pipettes with a bore of less than 1μ, and seen that the salts ammonium chloride and sodium carbonate diffuse uniformly through the protoplasm stained with neutral red; whereas if the eggs are merely suspended in solutions of these salts the NH_4 or CO_3 ions pass in through the surface layer but not the Cl or Na ions. In this egg, therefore, this semipermeability is the function of the surface film. But the physiology of cells is not all of it exemplified in a resting egg cell. The cell that secretes, the cell that absorbs, must have protoplasm that is discontinuous. In it there must be delimited regions bounded by surfaces, here at one moment, somewhere else the next, impermeable where but now they were permeable. It is not possible to reconcile physiological functions with a conception that admits semipermeability only at the superficies of the cell.

Semipermeability is the corner-stone in the structure of protoplasm. It is hard to see how anything that is known of the properties of proteins can enable them to provide for this. Loosely put together of heterogeneous atomic groupings, loaded up with water as they are, nothing but faith in the miraculous virtues of the unknown can have made us ascribe to them alone all that is puzzling in the edifice of the cell. If what is known is to count for anything, is it not at least possible that the paraffin chains of fatty acids and their derivatives may help us out? Some sort of partitions there must be; films that spread across the interstices of the labile spongy protein framework. Even were the protein coagulated, shrunken and set, this seems to be no less necessary.

INTERFACIAL PHENOMENA AND CELLULAR PHYSIOLOGY.

In attempts to fashion cytological conceptions on lines that are familiar in physical chemistry much has been made of the significance of surfaces in cells, not only the surface presented by the cell to its environment but also the surface of the protein aggregates in the colloidal solution constituting its substance. As the cell membrane has been supposed to be formed by adsorption at an imaginary interface between water inside and water outside the cell, so, too, an imaginary interface between the water permeating the "emulsoid" aggregates and that in which they float has been supposed equally to be the seat of adsorption. The aggregates are supposed to be mainly protein with relatively little water in their composition, the surrounding liquid water with relatively little protein in it, and that little in true solution. In an emulsion there is a true interface between immiscible liquids. Is it not possible that the pernicious suggestiveness of a term has deceived us? Can there be interfaces in the true sense of the word in an "emulsoid," where there is no question of immiscible liquids; where the liquid is the same throughout, and the non-aqueous phase, a solid, but solid something as an expanded seaweed floating in the sea is solid. Where is the interface? The many chemically polar points in protein molecules, by reason of which these molecules tend to adhere to one another, may serve, no doubt, to hold molecules or ions of other kinds as well; but if so the forces that determine the fixed positions of these foreign molecules and ions are not those understood to operate in adsorption. It is not a simple case of the Gibbs Thompson law. Fats are truly immiscible with water. Where oil begins water ends and there is a true interface. A monomolecular film of fat or lecithine coheres by virtue of the affinities of paraffin chains for each other, with which water has nothing to do. These chains are known to cohere. Straight, smooth, and homogeneous, they may be expected to fit closely and present, at least so far as they are saturated chains, no points to which foreign molecules or ions can attach themselves so as to weaken that cohesion.

If in order to understand the physiology of cells it is necessary to take into account interfacial phenomena, it is fats rather than proteins that we must look to to provide the interfaces. Surface phenomena, surface tension, and the formation of surface membranes presuppose a boundary at which the liquid water ceases: the presence of protein molecules, floated out in the water and containing many times their weight of water, sets no such boundary, even though the freedom of movement of water among the floating fabric of these molecules is somewhat restricted. When it is said that protoplasm is immiscible with water, the only way in which the proteins that it contains can account for this property in it is if the spreading protein molecules tend to join up, so as not to be scattered by the kinetic activity of the water within and without the region through which they are spread out. It is true that other colloidal ions to which the protein molecular meshwork is impermeable may give rise to unequal distribution of electric charges, because of the permeability of the same meshwork to smaller ions with a charge of opposite sign. But no one has yet succeeded in making it clear how any fundamental physiological functions in cells can be elucidated by this fact.

Whichever way we turn, therefore, we find that what is known of proteins points to the impossibility of accounting for the properties of the cell substance by their aid alone. Whichever way we turn there are indications that what is known and what it is possible to learn of the properties of fat must be of service. The rôle of fats in vital phenomena is a subject on which it may be expected that much may turn that is of importance to physiologists and to physicians.

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CARBOHYDRATE TOLERANCE IN PREGNANCY.*

BY H. F. HÖST.

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As early as the middle of last century Blot[1] called attention to the relatively frequent occurrence of glycosuria in pregnancy, but not until about the beginning of the present one was its influence on carbohydrate metabolism accurately studied, when v. Jaksch,[2] Hofbauer,[3,4] Lanz[5] and others showed that glycosuria could often be produced in pregnant women who were not spontaneously excreting sugar by increasing the amount of carbohydrate taken.

Pathogenesis of Experimental Glycosuria of Pregnancy.

The pathogenesis of this pregnancy glycosuria was assumed to be the same as that of diabetes mellitus. Thus Cristalli[6] asserted that it was due to a functional weakening of the liver by pregnancy, a view which was adopted by Hofbauer[3,4] in Germany.

The introduction of practical clinical blood-sugar estimation methods in the beginning of the present century rendered possible a more accurate study of the relation between the sugar in the blood and urine, and it was found that while diabetic glycosuria was always due to hyperglycæmia, excretion of sugar in pregnancy could often be demonstrated in association with normal or slightly augmented blood-sugar (Novak, Porges and Strisower,[7] and Jacobsen[8]). Glycosuria occurring spontaneously in pregnancy was, in the light of these investigations, classed with "renal diabetes" which Klemperer[9] had already described in the 'nineties. The numerous investigations of later years seem to show that the experimental glycosuria of pregnancy is also caused by increased permeability of the kidneys, the so-called renal threshold, but all do not at present share the same opinion, for Dietrich,[10] for example, recently maintained that it was the result of an abnormally high blood-sugar rise—a "morbid depression of the power of assimilation."

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Frequency of Experimental Glycosuria of Pregnancy.

Just as opinion is divided with respect to the pathogenesis of the experimental glycosuria of pregnancy, so also do views differ as to its frequency. A few authors like Frank and Nothmann,[11] Wetz and van Netz,[12] and Bauer,[13] state that glycosuria following an excess of carbohydrate can be constantly produced in the first three months of pregnancy, and therefore recommend a tolerance test as a certain diagnostic sign of pregnancy. Others, on the contrary, such as Seitz and Jess,[14] only detected glycosuria in half the cases examined, and deny the value of the test from a diagnostic point of view.

Concerning the actual cause of the glycosuria of pregnancy there are only the investigations of Küstner,[15] who concludes from them that the sugar excretion is of renal origin, and due to a function of the corpus luteum. In women, carbohydrate tolerance—measured by the blood-sugar rise following the administration test—and the position of the renal threshold have been studied very little, most of those who have undertaken these investigations having worked with men. However, we should expect, a priori, that, just as in men, individuals can be found with a low renal threshold and a relatively high blood-sugar rise after administration of carbohydrate with consequent glycosuria. Before judging the effect of pregnancy therefore, we must first clear up the questions of the tolerance and threshold in non-gravid women.

Experimental Results.

The work to be recorded here was carried out during 1923 in the Gynæcological Clinic. For permission to do it, as well as for kindness and help during the work, I am much indebted to Prof. Brandt. The object of the experiments was to discover how often glycosuria can be produced in pregnancy, whether the glycosuria is a result of a low renal threshold or is due to a big blood-sugar rise, and lastly whether any cause for the low threshold or the marked hyperglycæmia which provokes the sugar excretion can be found.

All the persons investigated received 50 g. chemically pure glucose dissolved in 200 c.cm. water in the morning on a fasting stomach. Blood-sugar analyses were made beforehand and every 15 minutes for two hours after the administration of the sugar solution, while the urine was examined every half hour. The blood-sugar determinations were done by Hagedorn and Norman Jensen's method,[16] and the urine was tested for sugar by means of Benedict's reaction. In a number of cases the calcium content of the blood serum was estimated by Kramer and Tisdale's[17] method.

As will be seen from Table I., 19 non-gravid women were investigated. These women were not absolutely normal, but had more or less trifling complaints such as dysmenorrhœa, displacements of the uterus, &c., which could hardly be accused of affecting the carbohydrate metabolism. Five of the 19 non-pregnant women got glycosuria. In two the glycosuria occurred with a maximal blood-sugar rise of between 150 and 200 mg. per 100 c.cm. blood, while in the other three the glycæmia was above 200 mg. None excreted sugar with a blood-sugar rise of less than 150 mg.; in other words, there were none amongst the 19 with a low renal threshold. In two of the women who did not excrete any sugar the blood-sugar rose above 200 mg. These two thus had higher renal thresholds than we generally find. As will be seen, no less than five of the 19 had hyperglycæmia in excess of 200, which seems to show that relatively high blood-sugar rises are rather common in women.

TABLE I.

Nineteen Non-gravid Women.

	Max. hyperglycæmia:—
Glycosuria in 5—	Less than 150 in none.
	Between 150 and 200 in 2.
	More than 200 in 3.
No glycosuria in 14—	Less than 150 in 1.
	Between 150 and 200 in 8.
	More than 200 in 2.

Altogether 39 pregnant women were examined in whom glycosuria had not been previously demonstrated. Thirteen of them were in the first three months of pregnancy, and the remaining 26 were in the fourth to ninth months. (Table II.) Eight of the 13 got glycosuria while five were free, and of the 26 whose pregnancy was more than three months advanced, ten had glycosuria, but there was no excretion of sugar in 16. The number of persons investigated is too small to form the basis of accurate statistics, but the experiments indicate that glycosuria can be provoked in about 50 per cent. of all pregnant women, and therefore rather more often in pregnant than in non-pregnant women, and that it can be produced more frequently early in pregnancy than in the later months.

TABLE II.

Thirteen Women, Pregnant in the First Three Months.

	Max. hyperglycæmia:—
Glycosuria in 8—	Less than 150 in none.
	Between 150 and 200 in 1.
	More than 200 in 7.
No glycosuria in 5—	Less than 150 in 1.
	Between 150 and 200 in 4.
	More than 200 in none.

Twenty-six Women, Pregnant in the Last Six Months.

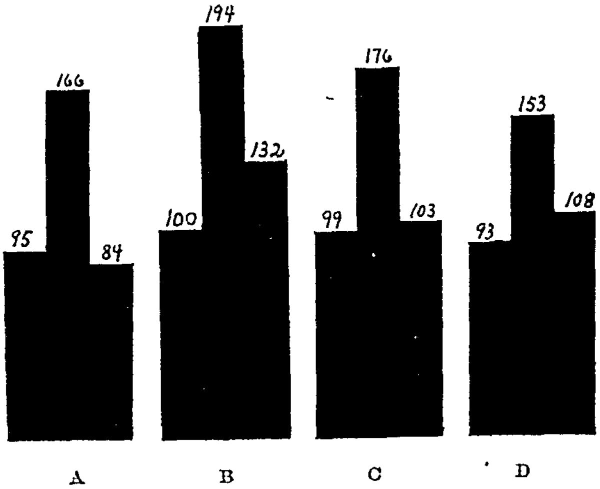
	Max. hyperglycæmia:—
Glycosuria in 10—	Less than 150 in 5.
	Between 150 and 200 in 5.
	More than 200 in none.
No glycosuria in 16—	Less than 150 in 9.
	Between 150 and 200 in 7.
	More than 200 in none.

On inquiring into the relation of glycosuria to glycæmia it will be seen that in the first three months no fewer than seven of the eight women who got glycosuria had blood-sugar rises above 200 mg., while one had hyperglycæmia between 150 and 200. In the women who were past the third month of pregnancy the conditions were different, since five who got glycosuria had blood-sugar rises less than 150 mg. and the other five between 150 and 200 mg., while none had more than 200 mg. Glycosuria therefore has usually a different pathogenesis in the first and second periods of pregnancy. In the first months there is a sharp blood-sugar rise which causes glycosuria, while the position of the threshold does not deviate from the normal, so that there is no renal glycosuria. In the latter part of pregnancy, however, glycosuria is, as a rule, due to a low renal threshold, while the blood-sugar rise is often remarkably small, and thus glycosuria in this stage of pregnancy can rightly be classed as renal.

As will be seen, in addition to the characteristic difference in the situation of the renal threshold there appears also to be a distinction in the blood-sugar rise—that is to say, in the carbohydrate tolerance in the first months and later in pregnancy, and a further investigation of tolerance is therefore of interest. The best measure of carbohydrate tolerance is a determination of the area of the blood-sugar curve after a large dose of glucose, as proposed by Hagedorn.[18] This calculation, however, is laborious, and in my opinion almost as good an indication of tolerance can be obtained merely from the maximal blood-sugar rise and the blood-sugar concentration two hours after the sugar solution is taken. By calculating the mean value of these concentrations and of the glycæmia before the experiment in non-pregnant cases in the first three months and in the last six months of pregnancy, the values can be graphically expressed as in Fig. 1.

In 19 non-pregnant women the *mean* blood-sugar concentration before the experiment was 99 mg., the maximal concentration 176, and after two hours 103 mg. In 15 women in the first three months of pregnancy the same values were 100, 194, and 132 respectively, and in 28 women in the last six months the figures were 93, 153, and 108. For the sake of comparison the result of the same tolerance test in 25 healthy men is recorded, whom I had previously investigated and whose values agree rather well with those of the non-pregnant women. It will be observed that the average blood-sugar rise in the first three months of pregnancy is considerably higher and lasts longer than in the non-pregnant, while at a later stage of pregnancy it is less than in the non-pregnant and much less than in women in the first three months of pregnancy. The number examined was so large that the result cannot be due to chance but must indicate a causal relation, which proves that in the first months of pregnancy there is, as a rule, a more or less pronounced hypofunction of carbohydrate metabolism, while in the latter part the opposite is often the case—that is to say, there is a marked capacity for rapidly metabolising large quantities of carbohydrate. If the several blood-sugar curves are studied, which space does not allow, the difference referred to will be still more striking, for it will be observed that some of the women in the early stages of pregnancy have blood-sugar curves which are typical of diabetes, while many in the later months only get a very small blood-sugar rise.

FIG. 1.



Carbohydrate tolerance in various classes. A, 25 healthy men; B, 15 women pregnant one to three months; C, 19 non-pregnant women; D, 28 women pregnant four to nine months.

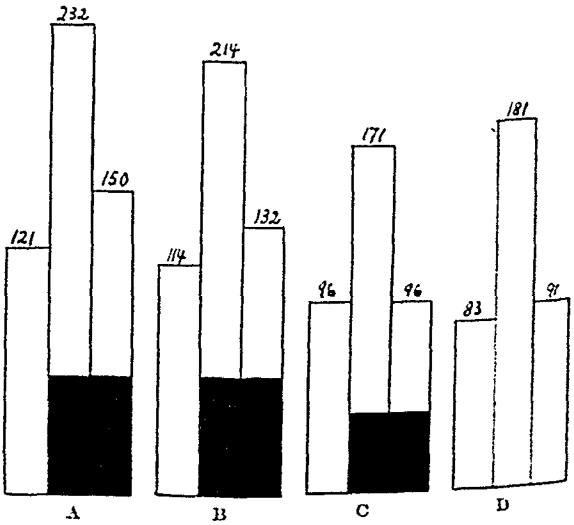
The tolerance test was done in a patient of 42, who suffered from repeated abortions, before and after two operations. The first two tests were made when the patient was two and a half months pregnant. As will be seen from Fig. 2 large blood-sugar rises occurred on May 18th and 21st, greatest in the first test, and also marked glycosuria, indicated by the black square at the foot of the columns. A few days later sterilisation by laparotomy was performed, and at the same time a corpus luteum of the right ovary was extirpated. The next tolerance test was done 12 days after the operation. There was a considerably smaller and shorter blood-sugar rise and slight but undoubted glycosuria. On June 2nd the uterus was evacuated. and on June 13th the fourth test was carried out. This showed a higher blood-sugar rise than the third test, but in spite of this there was no glycosuria. We can hardly conclude anything from these experiments on a single patient, because hyperglycæmia can vary greatly in uniform experiments in the same person, and, moreover, its maximum can only be approximately determined when blood samples are not taken more often than every 15 minutes. But if the experiments on this patient are taken in conjunction with those previously referred to, which show that the blood-sugar concentration after a tolerance test usually rises considerably higher in the first three months than later on in pregnancy when the corpus luteum is undergoing involution; and when it is remembered that the renal glycosuria often found in the later months of pregnancy disappears immediately after delivery, the experiments on this patient indicate that the corpus luteum of pregnancy depresses the carbohydrate tolerance measured by the height and duration of the blood-sugar rise and that the fœtus or placenta causes the low renal threshold which is characteristic of the later months of pregnancy.

In 12 non-pregnant cases 17 tolerance tests were done before, during, and after menstruation, to decide the question whether the corpus luteum of menstruation affects tolerance and the threshold as Küstner believes he has shown. The blood-sugar rise, however, showed no characteristic relation to the menstrual period, and the position of the renal threshold seemed to be identical, before, during, and after menstruation. Nor did the calcium concentration of the blood serum, which varied between 7·8 and 9·8 mg. per 100 c.cm. in ten pregnant and one non-pregnant woman, seem to exert any influence on the hyperglycæmia or the situation of the threshold after an administration test.

Summary.

To recapitulate the results of the present experiments, it appears that the investigation of glycosuria after large doses of glucose, as recommended by many authors, is not valid as a diagnostic aid in pregnancy, because glycosuria occurs relatively frequently in non-pregnant women, while it is far from being constant in pregnant ones. Second, the experiments prove that there is a curious and characteristic difference in the blood-sugar rise and position of the renal threshold in the first and second periods of the pregnancy. Early in pregnancy the position of the threshold is normal and the blood-sugar rise is often remarkably high, so that the glycosuria is due to

FIG. 2.



Carbohydrate tolerance in a patient of 42. A, before operation, May 18th; B, before operation, May 21st; C, corpus luteum extirpated, June 2nd; D, uterus evacuated, June 13th.

the marked hyperglycæmia and is not, as is generally believed, of renal origin. In the latter part of pregnancy, on the other hand, the blood-sugar rise is usually small but the renal threshold nevertheless, is often so low that glycosuria frequently occurs, which therefore, in this stage of pregnancy, can rightly be termed renal. Finally, the work has made it probable that the corpus luteum causes the large and prolonged blood-sugar rise which is characteristic of early pregnancy, while the low renal threshold in the later months appears to be dependent on the fœtus or placenta.

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RICKETS AND CHOLESTEROL.

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AND

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WITHOUT discussing the already extensive literature of the subject[1] it may be said that the pre-eminent importance of sunlight and ultra-violet rays in the prevention and cure of rickets is now generally recognised, and further that it has not hitherto found a satisfactory explanation. In connexion with the anti-rachitic effect of radiant energy, it occurred to one of us (O. R.) to associate it with an apparently unnoticed observation on the effect of light on cholesterol, made more than 20 years ago by Ritter (1901). His accidental observation that specimens of pure cholesterol, prepared 25 years previously by Schulze from gall-stones and lanolin, showed a drop in melting point of about 30° C. and had become yellow in colour, was afterwards confirmed by Schulze and Winterstein (1904, 1906) and shown to be due to the action of light. (See also Lewkowitsch, 1909.)

The possibility of an association of fat-soluble vitamin with cholesterol or a similar substance had also gained probability by the further study (unpublished) of certain colour reactions of cod-liver oil and liver fats of other animals, mentioned in a previous communication by Rosenheim and Drummond (1920). This assumption received further support by the discovery of Steenbock and Black (1924) that irradiation of food and inactive vegetable oils conferred growth-promoting and anti-rachitic properties on them. The activation of vegetable oils by ultra-violet light was confirmed by Hess and Weinstock (1924), and later these observers showed that the anti-rachitic properties of the irradiated oils were confined to the unsaponifiable fraction.

Action of Light on Sterols.

Guided by the consideration that the presence of sterols (cholesterol and phytosterol) is one factor common to the fatty secretions of the skin of man and animals as well as to vegetable oils, we were led to correlate the effect of light upon them with the production of an assumed anti-rachitic vitamin in both. In view of the observations of Schulze and Winterstein, those of ourselves, as well as those of the above-mentioned authors, we decided to investigate the action of light on cholesterol with regard to the photochemical production of a vitamin. The preliminary results of one part of these experiments, dealing with the growth-promoting vitamin A, have already been published by Drummond, Rosenheim, and Coward (1925),[2] and the present communication is concerned with the anti-rachitic vitamin D only. We are greatly indebted to Dr. Leonard Hill, F.R.S., for the use of the experimental animals which were fed under his control.

We soon established the fact that the action of ultra-violet light on sterols produces effects similar to those of ordinary light as observed by Schulze and Winterstein, but incomparably more intense. Thus, for instance, the melting point of pure cholesterol (from brain) fell from 148·5° to 125° C. after five hours' radiation from a mercury-vapour quartz lamp at a distance of 10 cm. Sitosterol (from wheat) similarly exposed showed a fall from 136° to 120° C. The melting point of coprosterol (from dogs' fæces) fell from 97° to 56° C. The latter well-crystallised substance was converted by the action of ultra-violet light into an amorphous yellow resin, whilst cholesterol and sitosterol, previously pure white, had become yellow. These effects are undoubtedly partly due to oxygen and to the ozone which is generated by the quartz lamp. In order to exclude this factor, which might possibly exert a deleterious action on any active principle formed, we decided to irradiate cholesterol in an atmosphere of nitrogen as well as in air. In view of the low penetrating power of ultra-violet rays and their subsequent absorption by the surface layer of cholesterol crystals, we used a solution of the latter in liquid paraffin. This solvent was chosen as it allows the passage of ultra-violet light and has no anti-rachitic properties by itself nor after irradiation. Preliminary experiments establishing this point also proved that, in the doses given, it had no purgative or other effect on rats. We had previously found that a watery suspension of cholesterol soon deposited a yellowish resinous substance on the sides of the quartz flask on radiation, thus preventing uniform action and an accurate dosage. A colloidal solution of cholesterol in water was also tried; it does not flocculate on radiation, but has the disadvantage of a low strength (0·25 per cent.).

Cholesterol easily dissolves in warm liquid paraffin, and a 2·5 per cent. solution was used. Whereas it crystallises out of this solution at room temperature, it was found that after radiation in a rotating quartz flask (in air or in nitrogen) it remained more or less in solution, thus indicating a physical or chemical change. At the same time the solution differs from the non-irradiated one by reacting with certain substances, yielding colour reactions which are still under investigation.

Experimental Results.

Our tests were carried out on rats, the technique usually employed in this laboratory being followed, the Sherman-Pappenheimer, 84, low phosphorus diet being used. Six rats were used for each series and the control. Diagnosis was made from radiographs of the animals killed at the end of the experimental period. We also determined the inorganic phosphate content of the mixed blood of each group.

Several series of experiments were made with cholesterol radiated in an atmosphere of nitrogen and also in air for periods of half an hour, five hours, and ten hours respectively. All the exposures to ultra-violet light were made in a rotating quartz flask. The doses varied from 0·2 mg. to 4 mg. of irradiated cholesterol and were administered per os daily to each individual rat by means of graduated capillary pipettes. The results are given in the table.

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[1] For a review of the literature up to 1924 see Special Report Series No. 38, Medical Research Council, second edition, 1924.

[2] It has since been found by these authors (private communication) that the growth-promoting effect of irradiated cholesterol, previously reported, is not a lasting one. The action of irradiated cholesterol on growth is therefore apparently identical with that of ultra-violet light itself and would seem to consist, like the latter, in mobilising the animal's reserves of vitamin A or, as suggested by Steenbock and Nelson (1923), by compensating the insufficiency of the anti-rachitic principle.

Results of Radiation Experiments.

Duration of radiation.	Dose administered.			Blood inorg. phosp. mg. %.
	0·2 mg.	2 mg.	4 mg.	
In nitrogen—				
½ hr. ..	Mild rk.	No rk.	Died.*	2·9
	"	"	No rk.	
5 hrs. ..	"	"	"	4·2
	"	"	"	
10 hrs. ..	V. mild rk.	"	"	4·1
	No rk.	"	"	
In air—				
½ hr. ..	Mild rk.	No rk.	No rk.	3·4
	No rk.	"	"	
5 hrs.† ..	—	—	—	—
10 hrs. ..	Mild rk.	No rk.	No rk.	4·1
	No rk.	"	"	
Controls ..	Mild rk.	Mild rk.	Marked rk.	3·0
	"	Mod. rk.	Mild rk.	

V. mild rk. = Very mild rickets. Blood inorg. phosp. = Blood inorganic phosphate.

* This rat died of broncho-pneumonia.

† This experiment had to be discarded, one rat having been partly consumed by its fellows.

Conclusion.

From these results it may be concluded: (1) That irradiation of cholesterol with ultra-violet light confers on it definite anti-rachitic properties, both in the presence and absence of oxygen. (2) Under the particular conditions of our experiments, increasing the time of radiation seems to increase somewhat the amount of anti-rachitic substance. (3) Taking the content of inorganic phosphorus in the blood as an index, it would appear that the limit of protection against rickets is reached by a dose of 0·2 mg., and this is especially marked in the half-hour radiation experiments.

During the progress of this work a communication appeared by Hess, Weinstock and Helman (1925), in which these authors reported results agreeing with ours in their main conclusion. They found that irradiation of a watery suspension of cholesterol or phytosterol conferred anti-rachitic properties on these substances. It may be remarked that in these experiments the lowest protective dose was five times as high as our lowest dose, and that their figures for the inorganic blood phosphates as a whole are on a lower level. These differences may find an easy explanation by the variation of procedure and the medium employed, and it is satisfactory to note that two groups of observers were led to the same result independently and guided by different considerations.[2]

Whilst it would be premature before further work has been carried out to assume the identity of the anti-rachitic vitamin with the active constituent of irradiated cholesterol, nevertheless the fact that anti-rachitic properties can be experimentally conveyed to such a well-defined chemical substance as crystallised cholesterol correlates the proved photosynthesis of this vitamin by the plant with its presumed photosynthesis in the skin, and thus affords a rational explanation for the beneficial effect of light in the cure and prevention of rickets. The presence of cholesterol and its derivatives in the skin and its fatty secretions, together with the easy absorption by the skin, of such fats rich in cholesterol as lanolin, would appear to strengthen the assumption that a vitamin formed from cholesterol in the skin under the influence of light would be easily absorbed and then liberated into the blood-stream.

These investigations are being continued, especially in the direction of elucidating the chemical changes which take place in cholesterol under the influence of light.

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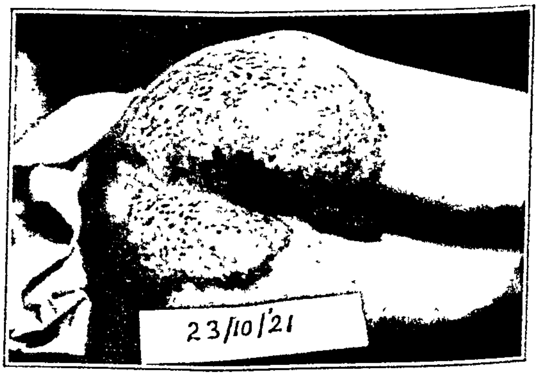
TREATMENT OF LUPUS BY IONISATION.

BY JAMES B. WHITFIELD, M.B.,
CH.B. GLASG.

HAVING had some gratifying results in treating lupus by ionisation, it was thought that an account of an extensive affection in a young man aged 18½, successfully treated by this method, might be of interest, and so an accurate record of the treatment given and progress made was kept.

The patient was sent to me in 1921. He had been suffering from lupus on the buttocks since he was two years old, a period of 16½ years. In making the diagnosis of lupus care was taken to exclude other skin affections, especially specific disease, of which no trace could be found, either historical or clinical. When treatment was commenced the disease was in active progress as is shown in Fig. 1, a photograph taken on Oct. 23rd, 1921. The thick advancing edge can be seen extending down the thighs. Fortunately the anus was not involved.

FIG. 1.



Before treatment by ionisation.

Technique.

The affected area was thoroughly cleansed with warm water and soap, dried, and sponged over with a 5 per cent. solution of potassium hydrate, which was left on for three minutes and then washed off with warm water, the object being to remove the resistant layer of skin which covers the tubercles. The patient then sat in a papier-mâché bowl on eight thicknesses of "Turkish towel," under which was an electrode eight inches square. A 2 per cent. solution of zinc sulphate was put into the bowl in such quantity that the affected area was covered. The scrotum, which was not affected, was protected by being anointed with soft paraffin. The positive lead of the electric current was connected to the electrode in this bowl. The negative pole was in a similar bowl containing a 1 per cent. solution of common salt, into which the patient put his feet. A current of electricity was then turned on, beginning at zero, and slowly increased until it reached 10–30 milliampères, and was continued for about 90 minutes.

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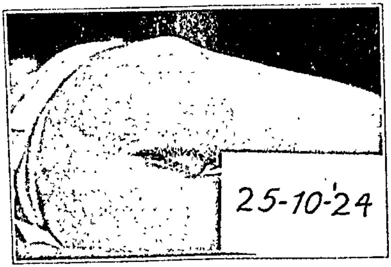
[2] While this note was in the printers' hands, a co... a his...ten appeared by Steenbock and Daniels (J. Amer ...pite of th..., 1925, lxxxiv., 1093) in which they mention, ...ly concluding ...s, that irradiated sterols possess anti-rachitic

At first the treatment was repeated at intervals of 14 days. Improvement in the condition was soon manifest; the advancing edge cleared up in about three months, but the old tubercles, which had become, as it were, encysted, were much more resistant. It was due to these old lesions that the treatment had to be carried on so long; until the resistant covering is removed the passage of the ions is almost impossible and the treatment is of little avail. After treatment has been given there is a considerable reaction, which begins in two or three days and continues for three or four days. It gives very little trouble to the patient and always clears up. No dressing is required other than a clean cloth placed in the under-garment while the reaction is in progress.

FIG. 2.



After treatment.

During the three years treatment was given on 51 occasions as follows:—

First year 21, averaging 44 milliamps. for 84 minutes.
Second „ 18, „ 32 „ „ 77 „
Third „ 15, „ 27 „ „ 61 „

At the end of the second year the disease had practically disappeared, but the treatment was carried on as a safeguard against relapse. The final result is shown by the photograph (Fig. 2) taken on Oct. 25th, 1924. There is an extensive scar, as may be expected, but it is quite soft and shows no sign of contraction or thickening.

This case is one of many that have been treated by ionisation with similar results. It is chosen as an illustration because of its long standing and the extensive area covered. It had not been treated in any way other than by the application of ointments and lotions at various times.

Ilkley.

Medical Societies.

INTERNATIONAL ASSOCIATION OF THALASSOTHERAPY:

CONGRESS AT ARCACHON.

DR. L. LALESQUE presided over the Fourth International Congress held on April 27th to 29th at Arcachon (Gironde), under the patronage of the President of the French Republic, when the treatment of rickets was the centre of discussion. Representatives of governments and learned societies attended a solemn opening session at 10 A.M. on April 27th. In the evening there were receptions and gala performances and a banquet. On April 30th visits were paid to neighbouring medical institutions, notably Fondation Wallerstein (Arès) and Montchic (Lacanau-Lac), each known as a "preventorium." At these institutions children of tuberculous parents, deceased, are cared for, educated, and eventually placed out in the world in some occupation for which they are fitted. The children live almost entirely in the open air and the occurrence of tubercle among them is practically unknown. On May 1st the Congress went to Biarritz and in the evening members were entertained by the municipality at a banquet.

Representation.

The countries represented were England, France, Italy, Spain, Holland, Belgium, Roumania, Sweden, Poland, Czecho-Slovakia, Esthonia, Cuba, Algeria, Uruguay, and Monaco.

The following congressists were accredited delegates from different scientific bodies or ministries of health: England: Dr. W. Gordon (Royal College of Physicians of London), Dr. Howard Humphris (British Medical Association), Dr. G. L. Pardington (Royal Society of Medicine). France: Dr. Armand Delille, Dr. Chauveau (General Secretary of the Congress), Dr. Delcroix, Prof. Desgréz, Dr. Gimbert, Dr. Jaubert, Dr. Mercier des Rochettes, Dr. Monod, Dr. Pierret (General Secretary for the English Section), Dr. J. L. Pech, Dr. Sorrel, Dr. Schmitt. Italy: Dr. Bardisian, Dr. Ceresoles, Dr. Maragliano. Spain: Dr. Pinilla. Holland: Dr. Hartog. Belgium: Dr. André, Dr. Delchef, Dr. Watry. Roumania: Dr. Anastasiu. Sweden: Dr. Halle. Poland: Dr. Knug. Czecho-Slovakia: Dr. Vesely. Esthonia: Dr. Blumenthal. Cuba: Dr. Amoedo. Algeria: Dr. Piquet. Uruguay: Dr. Acevedo. Monaco: Dr. Vivant.

The following journals were represented: "L'Avenir d'Arcachon," "La Dépêche de Toulouse," "La France," "La Gazette des Sciences Médicales," "Le Journal de Physiologie et Pathologie Générale," "Le Journal de Médecine de Bordeaux," "La Presse Thermale et Climatique," "La Presse Médicale," "La Petite Gironde," "La Vigie," and "The Lancet."

THE MARINE TREATMENT OF RICKETS.

DR. JEAN ANDRÉ opened the discussion by reading a paper on the Marine Treatment of Rickets. This treatment, he said, rapidly causes to disappear the enlarged tonsils, the anæmia, the loss of muscle and nerve tone associated with rickets. The pale, flabby, and deformed infant after a few months of the treatment is transformed into a robust, bronzed child. The treatment raises the whole resistance of the body and is an excellent prophylactic against tuberculosis. While the rachitic child may be treated in the town with massage and appropriate regimen and applications of ultra-violet rays, &c., the cure will be neither so quick nor so complete as if it had been carried out by the coast. The northern coast of France is exceptionally advantageous to the rachitic by reason of the wind, the continual movement of the air, and the actinic rays, and protection from them if they be too strong is always easy. Hazon says the ozone in the air has a soothing effect, as does also the wide expanse of horizon and freedom from crowds. After a few months' sojourn by the sea the treatment should be stopped for a few weeks. When a return is made susceptibility is increased and in this way the good effects of the treatment are augmented. As large an area as possible of the skin should be exposed so that a maximum of radiation may be absorbed. In spite of crooked limbs the little patients should be allowed to walk about the sand, thereby increasing both muscular and nerve tone. In most cases the use of plaster is to be deprecated, though in genu valgum it may be used with advantage.

DR. ARMAND DELILLE followed with a paper on

Rickets, its Pathogenesis by Deficiency of Sunlight and Helio-Marine Treatment.

Heliotherapy and sea-bathing, he said, are treatments which only commenced to be used in the latter half of the nineteenth century. The first results followed the establishment of the hospital at Berck sur Mer and shortly after this several other similar institutions were erected. The treatment consisted in allowing the children to play on the beach followed by supervised bathes in the sea. It was later discovered that the absence of vitamins was only a contributory cause of rickets, and that the faulty assimilation of calcium and phosphorus was due to absence or deficiency of sunlight. Dr. Alfred Hess, of New York, making observations on 2000 cases of all classes discovered that cases of rickets occurred when sunlight was deficient, whatever the diet, that Negroes were more affected than whites, and that of the whites there were more cases among southern races. Also the incidence was greater in the spring than in the autumn, all facts pointing to the absence of light as the essential cause. Rachitic children treated with heliotherapy for other diseases, such as tuberculosis, improved in a remarkable manner, and the amount of phosphorus and calcium in the blood was considerably increased. Normally the calcium-phosphorus content of the blood is highest in July and August. Helio-marine treatment should be started as early as possible, for when the first stigmata, such as bony changes, are observed, the disease has already been present for some time. There is nothing to take the place of real sunshine, and the use of a quartz-lamp should be regarded as only a temporary makeshift. In the summer months the best situations are on the northern French coasts; the Mediterranean Littoral should be chosen during the winter. The method of treatment is to expose the lower extremities three times in the space of an hour for three minutes on the first day, the following day the time is increased to five minutes, while the forearms are exposed for three minutes. The area is extended in this way till the whole body is exposed. Treatment must be continued until the rachitic stigmata disappear or are arrested. The cure should always be undertaken under medical supervision, and the value of sea-bathing, massage, and good food must not be forgotten.

DR. EDOUARD DELCROIX dealt further with the

Marine Treatment of Rickets.

The marine climate, he said, is really specific in the treatment of rickets. A course carried out with method and of sufficient duration (at least a year to a year and a half in rickets of early infancy and six months in cases of adolescent rickets) will produce a cure. When children are treated by the sea sufficiently early, most of the bony deformities disappear without recourse to surgery. It is a great pity that seaside towns make so little provision for sea-baths. It is an absolute essential for the cure in winter and at all times for fat, pasty children, and for those in whom development is delayed. The mode of action of the treatment is complex. The changes are of a physical nature, chemical and even electrical, and it is their combination which produce the remarkable effects of climatic treatment. A sojourn by the sea unites all the conditions favourable to the cure of rickets.

DR. LEONARD HILL and MR. A. WEBSTER presented a

Report on Rickets,

which was read by DR. W. GORDON. Rickets, states the report, is a disease of civilisation. The incidence reaches its height in winter and declines in summer. Mellanby was responsible for the modern theory that the disease was due to deficiency in vitamin A. It has later been shown that the disease could be produced by withholding inorganic calcium and phosphorus. In 1919 Huldschinsky reported cures of rickets with the quartz-mercury vapour lamp. Experimentally he showed that the effective rays were of a wave-length of 300 Å or shorter. In rickets the blood is low in inorganic phosphorus and calcium. Cod-liver oil and ultra-violet light both increase the concentration of these substances in the blood and this takes place by means of increased absorption from the intestinal tract. For this reason it has been held that the primary seat of rickets is the gastro-intestinal tract. The rachitic animal has not lost the power of bone formation, but lacks the necessary materials. From the results of experiments these workers "feel justified in making the broad generalisation that provided that an animals is supplied with food just sufficient to maintain life and a little growth and is given the bare minimum of bone-forming elements, calcium and phosphorus, then if ultraviolet light be supplied in an adequate amount rickets will not develop however unfavourable the animal's environment be."

DR. HOWARD HUMPHRIS read the paper on

Light in the Prevention of Rickets,

which appeared in THE LANCET, May 2nd, p. 912.

DR. JAUBERT said: Rickets is most frequently found in towns and overcrowded quarters. It is due, not so much to errors of diet, as to unsuitable conditions of living as regards habitation, lack of air, light, and sunshine. Statistics, including a majority of severe cases taken between the second and fourth years, show that treatment by the sea produces 95 per cent. cures or definite improvement. The results are better still when treatment is started before deformities have appeared. In the marine cure, other complex agents also take part, air, sun, light, sea-water, and it is impossible to dissociate their actions and effects, but it must be admitted that the light of the sun takes a preponderant part in the cure of rickets.

DR. MERCIER DES ROCHETTES contributed an

Analysis of the Action of Marine Treatment on Rickets.

It has been proved, he said, that rickets can be arrested completely by such treatment. Children should be sent when quite young to the coast in order to obtain a rapid and complete cure, and special provision should be made for infants as young as 15 months. The stay by the sea must be prolonged till cure is obtained. The time varies with the age of the child, the gravity of the lesions, and the climate, and the best situation is where treatment can be practised all the year round. The treatment should consist of life in the open air, warm and cold baths, and heliotherapy. Under the age of 4 years deformities disappear generally completely, from 4 to 7 years considerable improvement can be expected; after the age of 8 years marine treatment has no effect on deformities. The keel-shaped chest can nearly always be completely cured, the deformities of the lower limbs can be improved, except the antero-posterior curve in the tibia which is resistant to thalassotherapy. Ultra-violet rays from the quartz mercury-vapour lamp cure rickets in children of 6 months to 2½ years. It improves the general condition and has some action on the calcification of bones. Natural heliotherapy by itself and far from the sea ameliorates rickets. Sodium chloride baths and artificial salt baths alone cure rickets at all ages. They not only improve the general condition, but diminish the deformity. Living in the open air by the sea is enough to improve considerably the general health and improve deformities up to the age of 7 years. Marine aerotherapy with heliotherapy combined is the best treatment as much for a preventive as for a curative agent.

DR. ROBERT PIERRET (Hon. Secretary to the British Section) spoke on the relation of

Thermal Cures at La Bourboule

to seaside treatment of rickets. In the same manner that surgeons endeavour to stop deformities in the legs Dr. Pierret corrects thoracic deformities in rachitic children. The method is to treat the nose and throat by hot arsenical and radio-active thermal baths. The local treatment both before and after removal of adenoids disinfects the respiratory tract and renders the air passages free from obstruction. The passage for the air being then sufficient the air pressure in the lungs is no lower than the atmospheric pressure, so that the ribs are in perfect dynamic equilibrium. The baths act on the general system at least as well as sea-bathing, but the thermal cure is enhanced by a subsequent holiday by the sea. If the stay by the sea precedes the thermal treatment results are much less favourable. The waters at La Bourboule are highly arsenical, equivalent to 32 drops of Fowler's solution per litre. The favourable action of arsenic in the treatment of rickets is well known, and has recently been investigated by Prof. Hill at the National Medical Research Institute at Hampstead.

Dr. W. G. SUTCLIFFE outlined the advantages of the

Royal Sea-Bathing Hospital at Margate,

which was commenced as long ago as 1796. The building, he said, was considerably enlarged and modernised in 1882 and was still further enlarged in 1920. The present accommodation is for 205 patients, of which 100 are children whose education is carried on in the hospital. Hot and cold sea-water baths are provided in all the wards which are now arranged to open on either side on to covered verandahs so that patients can remain in the open air night and day. Sea-bathing is carried out by all patients that are fit for it during the summer months. Since 1901 the therapeutic agency of X rays has been freely utilised and the results obtained have been highly successful. Dr. Sutcliffe showed photographs of the wards and patients undergoing treatment.

Dr. J. L. PECH spoke on the

Biological Antagonism of the Infra-Red and the Ultra-Violet Radiations.

It has been known for a long time, he said, that the infra-red and ultra-violet rays are antagonistic and biologically opposed. It is generally forgotten that they nullify each other when acting simultaneously on a living subject. Experiments have led to the following conclusions, that it may be possible by an appropriate radiation to annihilate the effect of another radiation in action at the same time on a living subject; that two radiations can only be antagonistic to physio-chemical equilibrium in so complex a structure as the living organism, and their actions may vary with the particular organism. The effect of ultra-violet radiation on man is to produce an erythema and certain blood changes. If infra-red rays be exhibited simultaneously these effects are very much diminished or completely lost. The dosages in heliotherapy are imperfect and the infra-red rays are not taken into account, so that the results obtained are often diverse. Sunlight is withstood without marked skin changes by virtue of the infra-red rays, but when these are filtered, for example, by steam or moisture which occurs on heights and glaciers, dermatitis is very frequent, and for the same reason skin changes are more marked at the seaside than inland. The practical result of this is that it will be found in the future better results will be obtained in the cases of local treatment by using artificial sources of radiation so that only those rays required may be selected.

The next Congress will be held in three years' time, probably in Roumania.

ROYAL SOCIETY OF MEDICINE.

SECTIONS OF OPHTHALMOLOGY AND COMPARATIVE MEDICINE.

DISEASES OF THE EYES COMMON TO MAN AND ANIMALS.

THIS formed the subject of a joint discussion by these sections of the Society on May 8th, Sir ARNOLD LAWSON, President of the Section of Ophthalmology, being in the chair.

Mr. HUMPHREY NEAME opened with a paper on

Parenchymatous Keratitis in Animals.

He gave an exhibition of slides by the epidiascope and their description. The first illustrated a central rupture of the cornea of a sheep caused by a turnip striking it. Five days after the injury a very acute infection of the eye had occurred. Clouds of nuclei could be seen between the lamellæ, and the anterior chamber, between cornea and iris, was filled with purulent material. A layer of pus could be seen between the ciliary body, iris, and lens. Polymorphonuclear cells were abundant, and there was active suppuration. A ring abscess had occurred, the ring consisting of dense infiltration. Excision was not done in one case of keratitis, and the eye showed attempts at repair as extensive vascularisation had taken place. The polymorphs were replaced by round cells. In a less acute case, in a guinea-pig, the state of affairs was only evident on histological examination. Clinically the cornea was intensely opaque throughout, and during life there was an irregularity in its centre and its diameter was three or four times greater than normal. At the edge of the wound an attempt at repair could be seen, a downgrowth of epithelium filling up the edges of the wound. The pattern of the remainder of the cornea was largely lost, and there was marked cell infiltration. The next case demonstrated was one of tuberculosis in the eye of a cat. It was examined clinically before death, and the retina of one eye was detached. Both eyes were blind. In the eye most carefully examined there was a mass of tuberculous infiltration at the corneo-scleral junction, and multiple tuberculous nodules were seen in the iris and ciliary body. There was present a typical parenchymatous keratitis, and an intense lymphocytic infiltration, with a mass of cells on the back of the iris. This cat had tuberculous irido-cyclitis. Tuberculous parenchymatous keratitis occurred by extension of the disease from neighbouring structures. In this case the whole substantia propria was much infiltrated, also the fibres of the ligamentum pectinatum. At the corneo-scleral junction there was an almost staphylomatous condition.

Mr. Neame showed also sections from the eye of a rabbit which had tuberculosis from the subcutaneous inoculation of a tuberculous culture, mostly from lupus vulgaris of the human skin. Here a tuberculoma was evident at the corneo-scleral junction. In another tuberculous eye there was marked papillitis and extension of the tuberculous process into the optic nerve. A further case was one of distemper in a dog, and he showed a micro-photograph of a piece of the cornea. When seen clinically, the cornea was full of a network of vessels. There was intense infiltration, and a great overgrowth of connective-tissue cells. A section of an eye in an early case of distemper showed, clincally, nothing more than a slight haze of the cornea. Vascularisation was both deep and superficial. The cornea from a case of trypanosomiasis showed thin lines in the periphery and vessels extending a short way into the cornea. A mass of cell exudation extended into the anterior chamber, and the whole sclero-corneal junction and ciliary body were infiltrated. Trypanosomes were abundant in the specimens.

Mr. HENRY GRAY contributed a paper on

Ulcerative Affections of the Cornea,

their Complications and Sequelæ. He said this ulceration might occur in association with influenza in the horse, swine fever, trypanosomiasis, rabies, and as a result of infections of the conjunctiva. It was seen sometimes also when tuberculosis attacked the eye in oxen, sheep, cats, and dogs, in epizoötic lymphangitis, and in specific ophthalmia in the ox and the horse. In the dog this ulceration might be a sequel of paralysis of the ophthalmic division of the fifth nerve, or of tumours involving the roots of the nerve. In the horse and the cat, in which the cornea was thick, excavated ulcers were met with, but repair took place without much difficulty. Accompaniments of these ulcers were intense photophobia, lacrymation, and powerful blepharospasm. In the case of a wide ulcer, paracentesis should be carried out without delay, in order to avoid a large spontaneous perforation. When photophobia and blepharospasm were present, cocaine drops should be instilled to relieve the conjunctival congestion.

Mr. A. F. MacCallan read a paper by himself and Mr. Herbert Mason on

Cataract in Horses,

with some reference to iritis. The paper was based on the experiences of the writers in Egypt. Many varieties of cataract were to be seen in both man and the horse, including anterior polar, capsular, posterior capsular, cortical, lamellar secondary to irido-cyclitis, traumatic, and the dotted cataract of congenital origin. He said the mere presence of one or two opaque dots in a lens might not interfere with an animal for draft or riding purposes, but an extension of the opacity would make it useless for the saddle and for breeding, as most cataracts in horses were hereditary. Glasses could be provided for horses, but as the native Egyptian was satisfied with his lensless eye after the operation, glasses were deemed unnecessary for horses. He described the operation usually performed on the horse, and criticised the method of lens extraction set out in Woolridge's edition of Woodruff's work. In horses in France during the war there was a condition known as periodic ophthalmia, a form of irido-cyclitis. The animal had photophobia, with inflamed conjunctivæ, and the cornea was very hazy but not ulcerated. Also the iris was inflamed, and it was impossible to keep the pupil dilated with atropine. It was not a contagious disease, and could not be reproduced by injection of the eye humors into a healthy animal. It seemed to be due to some general disease, and post mortem there were found many opacities of the lens and flocculent opacities in the vitreous.

Discussion.

General Sir John Moore spoke in a general way of the eye diseases in army horses which occurred during the war in France. During that time there were 36,690 cases of eye disease in horses, and of these 19,813 were cured, while 2558 animals were destroyed, and 9723 cast and sold, the last-named being eagerly used as food. The most serious cases in these horses were those due to periodic ophthalmia, and at a conference with the French veterinary authorities careful consideration was given to this well-known disease, called in the old coaching days "moon-blindness." Horses which had this condition got very fat and were apparently healthy, but had to be relegated to work on the lines of communication. At one time during the war there were over 2000 horses being treated for periodic ophthalmia in France. Some veterinary officers believed the disease to be contagious, though the majority did not. Bacteriological examinations did not reveal any causal organism, and the disease was apparently as common in outside standings as in stables. Sir John Moore's own view was that bad sanitation was at the root of the disease, for during the war the animals were amidst great collections of fæces and urine.

Major Dunkin said that in the keratitis seen in distemper in dogs the precedent condition was a conjunctivitis, accompanied by a profuse secretion of tears. It was only when the disease became chronic that a corneal opacity appeared.

Mr. M. B. Oliver referred to an epidemic of periodic ophthalmia which he saw near Ypres in 1918. Contrary to what Sir John Moore said, many of these animals were obviously quite ill. He noticed they had iritis and cyclitis, with enormous exudates in the anterior chamber. In some the corneæ was quite opaque. In all the cases he saw the horses were blind.

Mr. Gray Clegg spoke of the occurrence of hairy moles on the corneæ of dogs, and of cataract in older dogs.

Mr. T. Harrison Butler described his experience in doing cataract extraction on a friend's King Charles spaniel. When he introduced the discission needle behind the iris and turned the lens down and removed the needle the lens sprang back, and this was repeated two or three times. Ether was then given and another attempt made, and as the anterior chamber became filled with blood he desisted.

Dr. Rayner Batten referred to nystagmus in dogs, and double detachment of the retina in a cat. Very little provocation would produce interstitial keratitis in a dog's cornea. He had done an advancement operation for marked internal strabismus in a bulldog. Prominent eyes in dogs were very liable to become ulcerated, and if the ulcers perforated there was likely to ensue a secondary form of glaucoma.

Prof. Woolridge said that in his hands the treatment of glaucoma in the dog had been most unsatisfactory. Certainly extensive opacity occurred in that animal on slight provocation, but in most cases it cleared up. Dermoid growth in the eye of the dog could be easily dissected off. Though a considerable portion of conjunctiva carrying the hair might be excised, only a small permanent opacity remained. He did not think the stricture passed by Mr. MacCallan on Prof. Woodruff's description of the operation for cataract was justified.

Mr. Treacher Collins spoke of the occurrence of parenchymatous keratitis in some pheasants at a shoot in Norfolk. These birds refused to rise, however nearly they were approached. One was sent to him for examination, and he found it had a vascular cornea and a typical interstitial keratitis. There was much cellular exudation and a marked development of vessels in the substance of the cornea. He asked whether veterinarians saw sympathetic ophthalmitis. He preferred for the disease which had been spoken of as periodic ophthalmia the term "periodic ophthalmitis." He had a specimen of dermoid growth in a pig's eye, which showed bristles sprouting out from the cornea, and in the Royal College of Surgeons Museum there was a specimen of a sheep's eye showing a tuft of wool.

Mr. Tudor Thomas spoke of a case of sympathetic cyclitis in a dog, both eyes being involved following injury to one.

Mr. George Mackay (Edinburgh) referred to the readiness with which keratitis occurred in a dog which suffered a small perforation, and the facility with which it cleared up again. He described a case in which he removed the lens in a dog for cataract, and had a difficulty in getting it away, as it seemed to be, in comparison with the human, large, hard, and round. No sepsis ensued.

EXHIBITION OF CASES.

Snowball Opacities in Vitreous.

Dr. A. Hugh Thompson showed a man, aged 62, who had the vitreous of one eye filled with round white bodies, which moved with the globe in any direction. The fundus appeared normal, and the vision did not seem to be impaired. Vision was R. 6/12, L. 6/18. Some considered the condition was congenital, but this man had only noticed it of late years. The bodies were too large and dull for cholesterine crystals.

Tuberculous Keratitis in a Cat.

Mr. Hamilton Kirk showed a case of this condition and directed attention to its frequent occurrence in this animal. This cat showed the disease in an early stage; it was brought to him six weeks ago, and there was only to be seen at present an amaurotic state of the pupil. He expected such lesions as detachment of retina to occur later. Tuberculosis affected the eye in cats, in addition to other organs, with remarkable frequency. There were nodular protuberances on the kidneys of the cat shown. 60 per cent. of dogs with distemper seemed to have eye trouble. In the human the nearest disease to distemper in dogs was measles, and eye troubles were not infrequent in measles. He thought the infection spread through the nasal duct, through the stoppage of the channel for tears. In cats there was a catarrhal form of distemper, with chemosis, swollen conjunctiva, photophobia, pain, and the secretion of a thick, cream material, which glued the lids together.

Mr. Neame referred to a paper dealing with eight cases of tuberculosis in cats, in all of which both eyes were affected. Coats found tuberculous masses in the choroid, with a variable degree of retinal detachment.

MANCHESTER MEDICAL SOCIETY.

A meeting of this Society was held on May 6th, Prof. G. R. Murray, the President, being in the chair, when Mr. H. Morriston Davies read a paper entitled Observations on the Diagnosis and Treatment of

Intrathoracic Disease.

In the first part of the paper five cases of particular interest, either as regards diagnosis or treatment, were described: 1. Gumma of the lung simulating tuberculosis. 2. Primary bronchial carcinoma, discovered accidentally by the X rays in a patient suffering from chronic bronchitis and emphysema. The diagnosis was made originally on the radiogram, then made more certain by the appearance of characteristic symptoms, and finally confirmed by operation. 3. That of a woman who for 30 years had attended hospitals for dyspepsia, dyspnœa, and tachycardia. X ray examination revealed a diaphragmatic hernia. 4. Unilateral bronchiectasis, due, it was discovered as a result of treatment, to fragments of teeth which must have been in the lung for ten years. The bronchiectasis was treated by artificial pneumothorax and phrenicotomy. Following collapse of the lung, fragments of tooth were expelled. Later, owing to the lung creeping out, the symptoms returned and a thoracoplasty was done. Following this a still larger fragment of tooth was coughed up, since when the patient had remained perfectly well. 5. That of a man wounded in the neck by shrapnel, which caused mediastinal suppuration and chronic pneumonia. The consequence of this was bronchiectasis with offensive sputum. The shrapnel in the base of the lung escaped notice until an X ray was taken with very oblique rays (from above downwards). Phrenic evulsion was done, paralysing that dome of the diaphragm. Since then there had been disappearance of all symptoms.

The second part of the paper was devoted to a description of the value of phrenic evulsion and thoracoplasty. Phrenic evulsion had superseded phrenicotomy because it broke the continuity of the accessory phrenic as well as the phrenic itself. It was therefore much more effectual and almost constantly resulted in paralysis of one-half of the diaphragm, the dome on that side rising up into the thorax and producing partial collapse of the base of the lung. The operation was of value for basal tuberculous and bronchiectatic lesions of the lung; for abolition of diaphragmatic cough; for relief from vomiting associated with coughing; as an aid in cases of partial pneumothorax; as a means of reduction of the pleural cavity in cases of chronic effusion; as a preliminary to thoracoplasty, as a means of testing the resisting capacity of the opposite lung; and was a prophylactic measure against onset of bronchiectasis in cases of unresolved pneumonia. The statistical results of thoracoplasty were practically the same as those for pneumothorax —i.e., 35 per cent. healed, 30 per cent. improved, 35 per cent. uninfluenced or worse. The operative mortality was about 8·5 per cent. It was indicated in unilateral (or mainly unilateral) cases of tuberculosis in which there were extensive mechanical changes and in which artificial pneumothorax was impossible owing to adhesions; also in unilateral bronchiectasis. Slides were shown illustrating the collapse of the lung and chest wall, and the comparatively slight resultant outward deformity.

Reviews and Notices of Books.

The Life of Sir William Osler.

By Harvey Cushing. Oxford: At the Clarendon Press. 1925. In two volumes. Vol. I., pp. 685; Vol. II., pp. 686, and Index. 37s. 6d.

Osler was the son of a Canadian rector who held the livings of Ancaster and Dundas not far from the Western end of Lake Ontario, and the boy was fortunate in his teachers, who were a cleric, William Arthur Johnson, and James Bovell, who only took orders late in life, but at the time when Osler was his pupil was a medical man and dean of the medical department of Trinity College, Toronto. They were both remarkable men and somewhat eccentric. They clearly possessed a large share of Osler's affection, and though their methods of teaching must have horrified their stereotyped colleagues, they evidently exercised enormous influence upon their pupil. Dr. Cushing gives many letters from them both, and in one from Bovell, who was notoriously absent-minded, we find a sidelight upon Osler's possible choice of a career and also an example of the teacher's wandering mind, for the letter is dated August, 1870, and he says to Osler, "I do hope you will work on, for I have quite made up my mind that you are to get a first-class for the East India Company." The East India Company was handed over to the Crown in 1858, and had therefore ceased to exist. From Toronto Osler passed to the medical school of McGill University, where he was appointed quite shortly professor of the Institutes of Medicine, being then only in his twenty-sixth year. In 1884 he left Canada, to the deep regret of his colleagues, for the United States, being elected professor of clinical medicine at the University of Pennsylvania. And in 1888 came the call to the Johns Hopkins University at Baltimore as professor of medicine and physician in charge of the medical department.

One of the outstanding incidents of his Baltimore days was the publication of the "Principles and Practice of Medicine," the result of clinical studies based alike on personal experience and on theories fortified by the wide consultation of the best German, French, and English authorities. The book was written with difficulty; we can see that Osler was consumed with the desire to write it, but painfully aware of the labour that he would be undertaking, and of the calls that the task would make on his over-occupied time. However, the task was steadily accomplished, and the work was recognised at once as a great acquisition to medical literature. There were at the time several books, notably those of Taylor, just issued, Bristowe, Roberts, and Fagge, which covered the range of medical study to the satisfaction of students and of their examiners, but Osler's treatise appeared at a time when not only modern developments required recording, but when a new spirit of approach was badly needed in response to altered central conceptions concerning disease. The observation, lucidity, and powers of judgment displayed made the book an immediate success, for the author contrived to give the lessons to be learned from the latest pathological investigations in combination with his own personal clinical observations, while he boldly accepted new theories of disease and new classification in accordance with the progress of knowledge. It was at Baltimore also that he developed the admirable plan by which clinical medicine should come directly within the sphere of University training, being placed alongside the other great faculties, the associated hospitals and institutions being regarded as schools of the University. With such a record it is not surprising that, when in 1905 he was appointed Regius Professor of Medicine at Oxford, the mother country was ready to welcome her great Canadian recruit.

The second volume of the book is largely given up to a description of Osler's Oxford career, a career in which he was not only happy to himself but a source of incomparable happiness to others. After the strenuous hustle of American life the atmosphere of Oxford appealed particularly to him. He delighted in the congenial society, and the duties gave him ample scope for his activities and free play for his broad outlook on life, facts which are proved over and over again by the correspondence included in the volume. We have here also a very full picture of the war, for Osler, it will be seen, was a firm link between the medicine of America and Canada and that of the Allies. We can see from the letters included that throughout the protracted struggle he worked heart and soul for the sick and wounded, and when the blow fell that saddened the end of his life by depriving him of his only son, he reacted to it by a deeper immersion in innumerable duties in connexion with the hospitals under Canadian and American control. On p. 577 is an extract from a diary kept by a brother officer of young Revere Osler, describing his burial: "A strange scene—the great-great grandson of Paul Revere under a British flag, and awaiting him a group of some six or eight American army medical officers. . . ." The significance of the note is that Paul Revere, after whom young Osler was named, was the notable revolutionary who made the famous midnight ride in 1775 from Charlestown to Lexington to warn the population of the landing of the British.

These large volumes bring before us the manner of man that Osler was by the recapitulation of internal evidence. We see him as one with unbounded powers of sympathy, kind, learned, and humorous, a model physician and teacher, and a reformer. He was able to combine deep respect for all that the old offered which was worth retaining, and with this acute perception of the debt owed by the present to the past, he possessed an equally acute perception of the directions in which reliance upon what had gone before can be placed as a guide to what should come. There is ever a tendency for one who essays to put on paper the portrait of a rare and charming personality to record every scrap of fact or detail which may throw a light upon his subject; the result may then be to demand from the writer exceptional qualifications. Not that we mean by this that he need be either learned or literary—both of which Prof. Cushing distinctly is, and neither of which was Boswell, the classical biographer for all time—but he should have great powers of assimilation so that the homogeneous information can be mentally digested and arranged before it is published—that is, if he wishes to write a popular book. Prof. Cushing has (and rightly) as profound an admiration for Osler as Boswell had for Johnson, but many will find that he has allowed his biography to be overloaded with details some of which obscure instead of throwing light upon the hero. It would be fair criticism to say that the result of more concentration would have been likelier to obtain for a life of Osler the popularity which it deserves, but it would certainly be quite unfair to blame the author for not having done what he has never attempted to do, or to assume that he could not have done it if he wished. Prof. Cushing has decided to give us all the information that we may digest it and make the great deductions for ourselves from a work of the highest interest.

PSYCHIATRY.

The Inheritance of Mental Disease. By ABRAHAM MYERSON, Professor of Neurology, Tufts College Medical School. London: Baillière, Tindall and Cox; Baltimore: Williams and Wilkins. Pp. 336. $5.

WITH this volume Prof. Myerson presents in an authoritative and lucid manner the results of many years' study of the hereditary factors of mental disorder. He discusses the whole conception of insanity and shows that, by departing from the use of the term "insanity," the approach to the subject as a group of "diseases of the human being to be studied in a naturalistic manner and clinically" is made more easy. He takes the attitude that there are independent groups of mental diseases, some of which he finds to have no hereditary value, while others run in families. He criticises the various theories of the heredity of mental disease and is inclined to the view that the transmissible mental diseases are not really hereditary characters in the same sense as stature or blue eyes, for example, but that they merely represent diseases caused by unknown agents whose effects persist over two or more generations and from which a stock may either recover or die out. Finally, he deals with the value of the problem in the racial life, for, as he says, "if a true heredity is involved, then our humanitarian efforts are injurious to the race, but if the problem is not one of heredity, then our social efforts are racial efforts and our noblest strivings have a eugenic backing."

The work is admirably presented. Prof. Myerson departs entirely from the text-book style of description; he takes the most prominent symptoms and describes them in such simple language as can readily be understood by those unfamiliar with the technical phraseology of the psychiatrist. In his grouping of mental diseases he takes a toxic group, a psychoneurotic group, an epileptic group, a feeble-minded group, and a group of five mental diseases, of which the underlying pathology is as yet somewhat obscure. These "conditions" (a term which he prefers to "disease") are dementia præcox, manic-depressive insanity, paranoid psychoses, involutional diseases, and senile dementia. It seems probable to him that in all the periods of life there occur three main types of mental disease: the first is a paranoiac type with hostility, suspicion, a deluded interpretation of the life around, and a gross egoistic over-evaluation of the self; the second is a dementing disease whose prototype is dementia præcox, but which occurs in modified form in the involutional and the senile periods; while the third is a disease marked mainly by a depressive mood with lowered energy, absent interest, and delusions of a depressive and apprehensive nature, occasionally associated with excitement and exaltation. Whatever their cause, the less resistant individuals develop these conditions early, others remain normal until the change of the involution, and still more resistant individuals develop them late in life.

The remainder of the book consists of a detailed and thorough exposition of the material which the author has collected during the years in which he has been working. He divides it up into sections dealing with the transmission of specific mental disease in the vertical line and the transmission horizontally. He concludes as regards the vertical transmission: (1) That the paranoid disease tends to paranoid states, perhaps finally to dementia præcox. (2) That the manic-melancholic diseases are in the main followed out, but in a certain number, especially in doubtful cases, they may be followed by dementia præcox. (3) That the involutional and senile state, if paranoid, trends towards paranoid states and dementia præcox. (4) That the manic-depressive states of involution and the senium trend towards manic-depressive states and dementia præcox, especially the latter. (5) That dementia præcox in an ancestor trends towards dementia præcox in the descendants with a certain scattering incidence of imbecility. (6) That neither for organic disease nor for alcoholic disease can anything definite be said. The conclusions concerning the horizontal transmission are as follows: (1) The psychoses of brothers and sisters tend on the whole to be alike. (2) An apparent exception is the frequency of the statement that one or other of the brothers or sisters with dementia præcox is also mentally defective. This he believes to be due to the more early occurrence of the disease, and his observations corroborate the belief of Kraepelin that some cases of feeble-mindedness are really early cases of dementia præcox. (3) His own experience throws doubt on the occurrence of typical mental defect and typical dementia præcox in brothers and sisters. He says: "It will thus be seen that brothers and sisters are more alike in types of mental disease than are parents and descendants. This is what one would expect if there is a greater similarity biologically and socially between members of the same generation than between members of two generations."

The book ends with a warning against any attempt to influence legislation in a eugenic direction. Prof. Myerson recognises, however, a basis for the demand that no one should be allowed to conceal the fact of mental disease when entering upon marriage, and that such concealment should be a cause for annulment. He advocates sterilisation of those types of feeble-mindedness which are known to run in families, and he is of the opinion that wherever mental disease exists in a family group for more than one generation it would be wise for society to sterilise those of the second generation who pass into institutions. "I do not believe," he says, "that we can ask much more than that in the present state of our knowledge, and we cannot afford to be unduly dogmatic. The common sense and stolidity of legislatures, what seems to be stupidity, is often enough justified by the dogmatic attitudes of science, a dogmatism hard to understand by one who knows the history of the theories of science."

This work is in every respect a valuable contribution to the literature of the subject and can be recommended to all concerned with these branches of science.

Heredity in Nervous and Mental Disease. By Various Authors. New York: Paul B. Hoeber. 1925. Pp. 332. $3.75.

THE third volume of the reports of the Association for Research in Nervous and Mental Disease is an important contribution to the subjects there reviewed. The work is divided into five sections. The first deals with general considerations, including the rôle of the cell and the chromosomes and the significance of exogenous and endogenous factors in heredity. This contains an excellent review by Dr. Charles Metz of work in connexion with the examination of the chromosomes of the fruit-fly, Drosophila, which is of the highest importance and interest. There is also a paper by Dr. L. F. Barker on the significance of certain factors, such as consanguinity, race, and alcoholism, in the development of the heredo-familial diseases of the nervous system. The second chapter is a study by Dr. Smith Ely Jeliffe of the parts of the central nervous system which tend to exhibit morbid recessive or dominant characters, and outlines the work carried out by many observers in connexion with the hereditary aspect of nervous and mental disease, such as the familial muscular dystrophies, disseminated sclerosis, epilepsy, and dementia præcox. Chapter III. deals with the pathology of diseases of known hereditary tendency, particularly Freidreich's ataxia, amaurotic family idiocy, Leber's disease, and retinitis pigmentosa. A final section, by Dr. Charles R. Stockard, gives an account of the experimental work he has done on the production of congenital malformations by means of chemical traumata. The fourth chapter considers Heredity in the Psychoses, the hereditary and familial factors being dealt with by Dr. A. M. Barrett, the pathological changes in patients dying from hereditary and familial psychoses by Dr. S. T. Orton, while Dr. C. B. Davenport discusses the proportion of feeble-mindedness in such hereditary conditions. An interesting chapter is contributed by Dr. J. Collins on the attitude of the novelist to the hereditary factor in life.

The book is enriched by many excellent histological plates and genealogical tables and other illustrations, and includes discussions which took place in the society, following the presentation of the various papers. The wide scope and detailed survey of the field of research given in the volume render it a work worthy of careful and diligent study on the part of those interested in the hereditary aspect of mental and nervous disease.

THE MEDICAL, DENTAL AND PHARMACY DIRECTORY OF SOUTH AFRICA.

Edited and published by EWALD HERBERT. Johannesburg. 1924. Pp. 259. 15*s.* 6*d.*

THE area covered by this directory includes the Union of South Africa, Northern and Southern Rhodesia, and South-West Africa, Basutoland, and Swaziland Protectorate. The greater bulk of the volume is taken up by useful information relating to the Union of South Africa. The personnel of the Department of Public Health is detailed and that of the medical councils and pharmacy boards of each of the provinces; the principal medical officers of the Department of Defence are named and also the medical and lay members of the Council of Public Health. Medical, dental, and pharmaceutical societies are listed, with their presidents and secretaries. The names, qualifications, and addresses of practitioners (*a*) of medicine, (*b*) of dentistry, (*c*) of pharmacy are then set out first in alphabetical order, and then geographically according to the town of residence. An account of the medical schools, hospitals, and district surgeons concludes that part of the volume devoted to the Union of South Africa. Corresponding particulars are given in respect of the other countries.

It is noted in the preface that the directory has been brought out under great difficulties, since no penalty is imposed on practitioners who fail to notify change of address in South Africa; official registers are thus not always reliable, and it is difficult to trace the movements of practitioners.

Generally speaking, the medical and dental degrees and diplomas of Great Britain and Ireland, which are registrable in Great Britain, are recognised in the Union. But those who hold foreign degrees or diplomas are advised to write to the council or board under whose jurisdiction they propose to practise, in order to ascertain if they are entitled to practise there.

THE PEARL OF FORTUNE.

A Tale of the South Seas. By Lieut.-Colonel T. R. ST.-JOHNSTON, C.M.G. London: Selwyn and Blount. 1925. Pp. 261. 7*s.* 6*d.*

Dr. T. R. St.-Johnston, of the Colonial Civil Service, has to his credit already an interesting volume of South Sea reminiscences, a work on the ethnology of the Pacific Islanders, some verse and fairy-tales. To this rather unusual literary output for a medical man he now adds a sensational novel concerning the discovery on a deserted coral island of a priceless pearl. There were three men only on the island at the time; one found it, one legitimately succeeded to it as a trust, and most of the book is taken up with the attempts of the third, essentially a "bad man," to obtain it, being stimulated not only by ordinary dishonest greed, but by a well-described passion for revenge. The story, while running on familiar general lines, is made interesting by the special knowledge the author is able to display in the *mise-en-scène*. We will not spoil it for the reader by detailing the way in which the interest is sustained by the temporary success and ultimate failure of the villain's designs.

JOURNALS.

QUARTERLY JOURNAL OF EXPERIMENTAL PHYSIOLOGY. Vol. XV., No. 1.—Contributions to the Physiology of Gastric Secretion: I. Gastric Secretion by Local (Mechanical and Chemical) Stimulation, by Robert K. S. Lim, A. C. Ivy, and J. E. McCarthy. The investigations were carried out entirely on dogs provided with gastric pouches or fistulæ. The various kinds or types of fistulæ used by different observers are described and illustrated. Some observations on normal men are included for comparison, and radiographs of the entire stomach pouch after meals are figured. A long historical account of previous observations on local mechanical and chemical stimulation is given with well-documented references to the original papers, and the authors' experimental results are recorded. The mechanism concerned in gastric secretion is discussed and the following working hypothesis is suggested. All stimuli that excite gastric secretion act essentially by increasing the active blood-flow through the gastric glands; the means by which this is accomplished may be quite varied, the motility of the stomach being in some way involved. This view is not held to the exclusion of others, for the enteric reflex may play an important rôle. But since this mechanism does not suffice to explain the secretion to meals in the denervated pouch, and since all attempts up to the present have failed to prove a hormone or humoral mechanism, the authors believe it is better to adopt a hypothesis which offers a common mechanism, and they claim that their observations offer a satisfactory explanation for at least a part of the hypernormal gastric secretion ("hypersecretion") that is observed to occur in cases of pyloric obstruction. The factors concerned in the excitation of gastric secretion are: (1) The cephalic phase, heretofore referred to as the "psychic secretion" demonstrated by Pavlov, which is excited chiefly by the taste, smell, and mastication of palatable food, and by slight or hypnotic suggestion of palatable food. The term "psychic secretion" is rejected because it is not necessarily psychic, as it has been shown to occur in the absence of the cerebral cortex. (2) The gastric phase, in which mechanical and chemical stimuli are effective. (3) The intestinal phase, in which the stimuli are certain chemical substances acting in the intestine as proved in the next paper by the same authors, entitled "The Intestinal Phase of Gastric Secretion." The intestinal phase of gastric secretion, they hold, is due to the action of the products (e.g., peptone, amino-acids, and amines) of digested complex food substances and not apparently to the food in its raw state (meat, carbohydrates, and neutral fat). Water in the intestine stimulates, but not invariably. Gastric secretion may be stimulated from the intestine by a non-absorbable substance—namely, 0·5 per cent saponin solution. The authors conclude that their observations definitely disprove the specific pyloric or gastric theory as originally stated by Edkins, and maintain that their observations demonstrate that the intestine as a pathway for the stimulation of gastric glands must be considered in an analysis of the factors concerned in the genesis of gastric secretion. In short, the existence of an intestinal phase is proved. —The Effect of Lesions of the Hind- and Mid-brain on Micturition in the Cat, by F. J. F. Barrington. In previous publications the author had shown that two of the reflexes which go to make up micturition do not in the cat arise in the cord but in the brain stem, at approximately the level of a plane through the posterior part of the inferior colliculi dorsally and the middle of the pons vertically. These two reflexes are the only two which produced a powerful and sustained bladder contraction, and to their abolition the suppression of micturition resulting from transection of the spinal cord is apparently due.—Alterations in the Form of Mammalian Erythrocytes in Hypotonic Plasma, by Eric Ponder and W. G. Millar. The authors find that the diameter of the human erythrocyte becomes less as the cell volume becomes greater, and this condition is typical of the behaviour of a balloon-like body. They conclude from their own results, and from those of other observers, that the red cell may be treated as a balloon-like body—i.e., is composed of a membrane containing a fluid or a semi-fluid material, probably a colloidal system, and is not, as suggested by Rollett, composed of a dense stroma in the meshes of which the hæmoglobin is contained.—Action of Adrenalin on the Perfused Fish Heart, by A. D. Macdonald.

Reports and Analytical Records.

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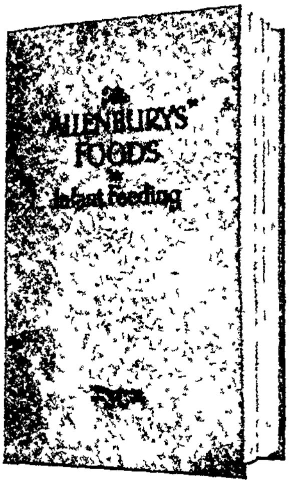

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See also pp. 27 & 37.

THE LANCET.

LONDON: SATURDAY, MAY 16, 1925.

HEREDITY IN MENTAL AND NERVOUS DISEASE.

THE transmission from parent to offspring of mental and physical characteristics has been accepted as a fact from the beginning of time, but this principle cannot be applied to disease processes quite so simply. The complex living organism is made up of a number of individual entities together composing the whole, and in the consideration of the transmission of qualities the questions at once arise: Does the innate characteristic of the individual persist unchanged and is it transmitted in its unchanged form, or can the characteristic be modified during the life of the individual, and can this modified characteristic be transmitted? The Mendelian laws showed that in comparatively simple organisms, with clearly recognisable traits, the innate characteristic persisted and that the manner of its appearance in the progeny could be mathematically computed. The advent of Darwinism and the theory of sporadic variation further deflected attention from the second possibility, but opinion now shows a trend towards the neo-Lamarckian attitude which affirms that the acquired modification may, under suitable circumstances, be passed on. The Mendelian law is very hard to apply in the complex organism and more particularly in the field of disease. It is difficult, in the first place, to pick out the definite fundamental trait, the unit characteristic; what appears unitary may, in fact, prove to be highly complex. Apart from a very limited group of abnormalities, such as hæmophilia, albinism, and certain familial myopathies, very little in this line has actually been accomplished beyond the establishment of a certain persistence of characteristic in a family tree.

In medicine it has been the custom to introduce the heredity as an ætiological factor in disease, especially in cases where no other definite causative factor is known. The history of pathological research, however, offers many instances where the hereditary influence was once supposed to be the all-important agent, when further advances in knowledge have shown the disease to be one acquired in the life-time of the individual. In such cases, even where the disorder has been definitely proved to be due to an environmental cause, such as the invasion of micro-organisms, the exponents of the hereditary theory merely change their ground and speak of a "diathesis" or a "constitutional tendency." Prof. ABRAHAM MYERSON, in a work reviewed in our columns this week, emphasises this point in relation to tuberculosis. He says:

> "Up till Trudeau's time, in fact right up to the discovery of the tubercle bacillus by Koch, the main factor in the causation of the disease was held to be heredity. There were plenty of families found in which tuberculosis occurred 'generation after generation,' plenty of families found in which all or many of the brothers and sisters had the disease, the same kind of evidence we have to-day for the 'inheritance of insanity.' . . . With the discovery of the infecting organism as a cause of tuberculosis heredity received a knock-out punch; in fact, everyone now loudly proclaims that there is no heredity in tuberculosis, but instead the metaphysical 'predisposition' is acclaimed, and still lingers to obfuscate intelligent thinking."

The real obstacle, as it appears to us, in the way of any advance in our knowledge of the hereditary transmission of disease lies, firstly, in the difficulty of finding a "unit character." There are few diseases which can be so regarded; the majority are symptomatic groupings. Particularly does this apply to mental and nervous disorder, of whose ultimate nature we have at present little accurate knowledge and concerning which it is probable that future research will radically alter our conceptions. Secondly, we do not know how far a certain grouping of symptoms may constitute a biological reaction to certain specific environmental circumstances. Because a certain symptom-complex appears in a national or family grouping it does not necessarily follow that the cause lies within. There is a strong measure of probability in the alternative explanation—viz., that the mechanism of biological adaptation to the environment is producing a similar series of reactions in a number of individuals exposed to the same conditions. Thirdly, we are remarkably ignorant of the laws governing degeneracy, atavism, or simple failure of development. It is a matter of consideration whether a number of the disease entities now recognised are not phenomena of this order rather than disease processes proper.

The progress of *homo sapiens* has been not biological but sociological; it has depended upon his control of and ability to grow at the expense of his environment. The development of man is not reckoned in terms of biology but in terms of his capacity for using materials—the Stone Age, the Bronze Age, the Age of Steam. There has been steady progress in the manipulation of the environmental factor, and it may be that the hope of medical science lies in a further extension of this principle. It is a comforting reflection that the history of medicine shows a steady tendency to eliminate the hereditary in favour of the environmental cause as the knowledge of morbid processes has become more explicit. For it is still a question whether the advance of the human race depends upon the adaptability of man to his environment or upon his capacity for adapting the environment to himself.

THE DYNAMICS OF THE CELL.

IN man's scientific struggle to bring under his direct control all the reactive phenomena exhibited by the animate and inanimate world, progress has been conditioned to a large extent by his power of analysing the concrete basis of his research into particles of ever increasingly minute dimensions, and of defining the laws governing their mutual interaction. Physics and chemistry are approaching each other on the common ground of atomic and molecular dynamics. Physiology, towards which medicine must unceasingly look for a rational interpretation of the problems which confront her, is on her part largely dependent, and ultimately entirely so, on the physico-chemical elucidation of the structure of matter. Without in the least wishing to disparage experimental work done on the whole animal and especially on man—work to which physiology and medicine owe a great and lasting debt—we cannot refrain from emphasising the tendency at present exhibited in physiology to make use of the synthetic method of experimentation. Such a method of study—namely, the study of the functions of an organ isolated from the disturbing and uncontrollable influences of the rest of the body—enables a much more exact determination of the reaction of the individual organ to changes in environment to be made than would otherwise be possible.

Witness the mechanism of muscular contraction and the law of the heart, to mention but two results of fundamental value obtained by this means.

Clearly the individual cell forms a still more particulate field for study—one striking even more deeply towards those basal reactions which are at the root of all natural phenomena. Prof. J. B. Leathes, in the undelivered Croonian lectures for 1923, the last of which we publish to-day, focuses attention in a fascinating manner on the structure of the cell and especially on the part played by fats in the cytological reactions which manifest themselves in such divers ways in vital phenomena. Protoplasm we know to behave as a colloidal solution; when observed under the ultramicroscope particles in Brownian movement can readily be seen. These particles have usually been looked upon as protein aggregates and to account for the high viscosity exhibited by the protoplasm; the colloidal solution has been considered to conform to the emulsoid rather than the suspensoid type. That is to say, the dispersed phase consists of aggregates containing a dilute solution of protein in the interstices between the molecules whilst the continuous phase is a dilute solution of the protein. The cell membrane itself will be composed of any substance which lowers surface tension, this quantity by the principle of Willard Gibbs always striving to become a minimum. Proteins, therefore, will be concentrated in this position, a fact which is readily demonstrated in the surface condensation experiments of Ramsden, or more familiarly in the formation from egg-white of froth which speedily takes on the irreversible rigidity of the meringue. The cell membrane must be looked upon as an intimate and living part of the cell—a portion, indeed, which is in dynamic equilibrium with the constituents of the cytoplasm, and changing its structure with any change in the internal composition of the cytoplasm. The membrane of the resting cell is almost perfectly semipermeable—that is, freely permeable to water but impermeable to the majority of physiological crystalloids. Changes in permeability, however, readily occur. We may mention the decreased electrical resistance of Laminaria cells when transferred from sea water to solutions of pure sodium chloride. Heliotropic curvature in plants is an index of increased permeability of, and, therefore, loss of turgor by, those cells directed towards the light. Excitation is accompanied by increased permeability, whilst narcotics, as would be expected, have the reverse action.

But it is to the presence and state of fat in cells and cell membranes that Prof. Leathes directs special attention. That fat forms an intimate and essential part of the structure of the cell is shown by the fact that in starvation the wasted tissues—adipose tissue, of course, excepted—do not lose a disproportionate amount of fat. This cell fat is found in at least two physical states—namely, as small particles in the cytoplasm and as the lipoid component of the cell membrane. An explanation of the coexistence of a continuous lipoid membrane and dispersed fatty aggregates may, perhaps, be found in the study of the behaviour of fatty substances when forming films at an air-water interface. The physical properties of substances in this condition are very different from those of the same substance in bulk. These properties have been studied by Langmuir and by Adam. By means of an ingenious arrangement it has been shown that unimolecular films are formed when fatty acids spread on water, the molecules being oriented in a definite direction perpendicular to the surface. The polar group of the molecule is attached to the water, and the kinetic energy of the molecules of the latter is imparted to a certain degree to the molecules of the film causing a much greater intermolecular distance than is exhibited by the same substance in mass at the same temperature. The films may exist in two main forms, either in the condensed state, when the substance is in reality a two dimensional solid or liquid, or in the expanded state, a two dimensional gas. Prof. Leathes has extended this work in a study of the films formed by lecithin and by cholesterol, lipoids which enter so ubiquitously into the formation of the cell membrane. The former is found to form a highly expanded film, the latter a condensed one. Indeed, the myelin outgrowth from the surface of lecithin in a watery medium is an expression of this tendency to form an expanded film. Clearly any interpretation of cell structure which fails to take into account the extraordinary properties of unimolecular layers of fats and lipoids must inevitably be short-lived. Prof. Leathes points out that it is impossible to account for the properties of the cell substance by the aid of protein alone, and "if in order to understand the physiology of cells it is necessary to take into account interfacial phenomena, it is fats rather than proteins that we must look to to provide the interfaces."

We commend the lectures to the close study of our readers. It is such work as is embodied in them which bids fair to expose the secrets of cell life, and so give us an ever clearer and more valuable insight into the nomocracy of vital phenomena.

THE CONTROL OF VACCINES: AN APPEAL TO PARLIAMENT.

We feel confident that the medical profession will support the appeal we make to Members of Parliament to pass the Therapeutic Substances Bill at an early date. This useful little measure, which now awaits a second reading in the House of Commons, has already attained a third reading in the House of Lords three times—in July, 1923, in May, 1924, and in March of this year. It seeks to secure the standardisation and purity of certain substances, such as vaccines, sera, salvarsan, insulin, and pituitary extract, which are incapable of analysis by ordinary chemical process.

In the field covered by the Bill, England at present lags behind other civilised countries. The United States, France, Italy, Spain, Germany, Norway, and Sweden submit the manufacture of these substances to the most rigid inspection. Denmark has gone even further and insists that all such preparations be made in State laboratories only. There is no occasion to go thus far in England where private firms have established so high a standard of manufacture. But undoubtedly it is urgently necessary to set up and enforce tests of purity and potency. Fatal cases have occurred because the practitioner has no certain guide to the strength of some of the new and indispensable remedies which scientific research has placed in his hands. Some of these substances are highly poisonous unless prepared in properly graded quantities. In practice a doctor acquires with immense care and caution an experience of the activity of pituitary extract supplied by a particular firm. If accident or emergency compel him to depend upon the product of another firm, he is working in the dark for want of the uniformity which this Bill is designed to create. His accustomed prescription may prove equally dangerous because on the one hand it has not the efficiency upon which he is relying, or because on the other hand its unsuspected strength amounts to an overdose. At present there is nothing to prevent this country from being flooded with preparations which the other countries named above have already rejected for bad quality. There is nothing to ensure that imported preparations shall conform to the careful standards which British manufacturers have severally established for themselves. If we delay much longer and if an international convention is signed before any official body in this country is authorised to standardise British products, we shall find that American and Continental manufacturers will be able to sell their products here while British products will be refused in America and on the Continent.

The Bill contains adequate safeguards and will secure uniformity of standards of authenticity and activity. The Minister of Health, the Secretary for Scotland, and the Minister of Home Affairs for Northern Ireland, acting together as a joint committee, are directed to consult an advisory council, which will include representatives of the Medical Research Council, the General Medical Council, the Pharmaceutical Society of Great Britain, and the Institute of Chemistry of Great Britain and Ireland. The Bill has suffered, it would seem, not only from its rather unhappy title, which is neither attractive nor explanatory, but also from its non-contentious character. Had it been more controversial, it would have excited more discussion and its purpose would have been more widely understood. It has aroused no hostility either from the medical profession or the manufacturers. The latter, indeed, as we stated when discussing the proposals in these columns in 1921,[1] are strongly in favour of the scheme because it protects both themselves and the public from the activities of those who are inefficient or dishonest. The Bill involves no bureaucratic extravagance and no horde of new officials. The testing will mainly be done by the manufacturers themselves, and the supervision will be undertaken by the Medical Research Council. Let it be clearly understood that, until this Bill is passed into law, lives are daily being needlessly endangered. The matter must not be left till the evidence at an inquest creates a sensation for the public and a panic for patients. The House of Commons will not wish to show itself indifferent to the perils of the present position.

THE INTER-STATE POST-GRADUATE ASSEMBLY.

THE Inter-State Post-Graduate Assembly of America, directed by the State Medical Association of that country, is visiting the British Islands during June. Opportunity will be taken to hold the Annual Congress of the Association on this side of the Atlantic, and the inaugural ceremony will take place on June 2nd at 9.30 A.M., at the Wigmore Hall, London, W., when the Duke of York will be in the chair. A reception will be held on the evening of the same day at Lansdowne House by the Princess Wiasemsky and Mr. Gordon Selfridge. The banquet in connexion with the Assembly has been arranged for Friday, June 5th, and by the permission of the Corporation of London will be held in the Guildhall at 8 P.M., Dr. Charles H. Mayo, of Rochester, Minnesota, presiding, while the chief speaker will be Mr. Neville Chamberlain, Minister of Health. On the following day the American Ambassador and Mrs. Houghton will give a reception to the Assembly at Crewe House.

The visit to London is part of an itinerary, which includes also Edinburgh, Dublin, Leeds, Liverpool, Manchester, Newcastle, Belfast, and Glasgow, and at all these centres arrangements of a social nature have been made. The general programme of the tour is in the hands of Mr. Philip Franklin, F.R.C.S., 27, Wimpole-street, London, W. 1.

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[1] THE LANCET, March 5th, 1921, p. 497.

Annotations.

"Ne quid nimis."

TREASURY GRANTS TO UNIVERSITIES.

THE impartial distribution of the annual contribution from the Treasury among the universities and university colleges applying for State help is a formidable task. For several years it has been entrusted to the University Grants Committee to assess the relative urgency of the needs of some 50 institutions. The personnel of the committee consists of Sir William McCormick (chairman), Sir William Bragg, Sir Dugald Clerk, Sir Wilmot Herringham, Sir Arthur Keith, Sir Frederic Kenyon, and Sir Stanley Leathes. In academic circles the annual report of this representative committee is studied with at least as much anxious attention as the National Budget. The report for 1923–24,[1] recently issued, includes as usual, besides a table of the recurrent and non-recurrent grants allocated, full statistics of the institutions subsidised. Particulars as to number and age of admission of new students, the number of full and of part-time students, the proportion of students as to those of each sex in each faculty, and the number of degrees and diplomas obtained, as well as summaries of income and expenditure, are clearly set out in appendices. Incidentally, full-time students working in the faculty of medicine (including dentistry) throughout Great Britain amount to 10,861—8863 men and 1998 women—and even these big numbers do not indicate the total, since Guy's Hospital Medical School is not among the applicants for State aid. The corresponding figures for 1922–23 are 11,866 (9498 men and 2368 women), so that some diminution is shown.

A table that appears this year for the first time shows the salaries of the full-time teaching staffs at institutions other than Oxford and Cambridge. The salaries of the 623 professors average £977, and range from £550 (nine posts) to £2000 (seven posts). It is noted that of the 55 professors receiving salaries below £800, 36 work in the University Colleges of Exeter, Nottingham, Reading, and Southampton, and in the Durham colleges, and that in most institutions the minimum salary for a professor is £800 a year. The figures do not, the committee point out, indicate a very generous national conception of the rate of pay suitable to the highest class of academic worker; but they do not consider it desirable that any attempt should be made to lay down a uniform minimum salary for this or any other grade of university post in all places and in all subjects. Universities differ from one another in size, wealth, and standing, and a chair at one centre may carry a heavier load of work and responsibility than the corresponding chairs at others; again, different subjects, for reasons which may have little connexion with their intrinsic importance, occupy different places in the scale of values that reigns in the academic market. No examples are cited, but it is obvious that the highest professorial figure (£2000) represents a scale of pay below which it would be impossible to induce members of the medical profession to give up lucrative consulting practice in London for full-time service. The general systematisation of salaries would not, in the opinion of the committee, benefit university education and would tend to impede that free circulation of teachers through various institutions which is a valuable asset in academic life. However, the problem of the remuneration of the senior member of the lecturer grade is regarded as an urgent one, and a suggestion is made that individual service might be recognised by preferment to a special post which might be created for and need not necessarily outlive the holder.

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[1] University Grants Committee. Report including Returns from Universities and University Colleges in receipt of Treasury Grant. Academic Year 1923–24. London: H.M. Stationery Office. 1925. Pp. 44. 3s. 6d.

During the year under review the committee paid a series of visits to institutions receiving grants, their previous visitation having taken place in 1919–20. They conclude that while real progress has been made in the intervening period, improvement is urgently called for as regards conditions of service of staff, and the provision of libraries and of material equipment in such departments as already exist, and that the responsibility for maintaining new departments should not be undertaken until the existing ones are put on a satisfactory basis. The social needs of students, especially more extended facilities for life in suitable residential halls, should also receive early consideration. These needs are recognised by the majority of the institutions and depend only upon increased financial resources. The increased grant-in-aid voted by the Treasury for the academic year 1925–26 is noted with satisfaction by the committee, who will have at their disposal £1,550,000 for that year in place of £1,242,570, which is the amount voted for the year 1924–25. The report throughout shows unmistakable signs of care to consider the highest interests of university education in this country from all possible points of view, and the committee deserve the gratitude of the public as well as that of the academic world for their labour.

THE SEROLOGICAL DIAGNOSIS OF SCARLET FEVER.

IN 1918 W. Schultz and W. Charlton stated that if serum taken from a normal person or from a convalescent case of scarlet fever was injected intradermally into the skin of a person with a bright scarlet fever rash there appeared after a time a complete blanching of the rash at the site of injection over an area from half an inch to a few inches in diameter. W. Mair[1] showed that Schultz and Charlton were mistaken in their claim in so far as related to the serum of a normal person who had not been rendered immune to scarlet fever. More recently the serum of horses immunised by means of the hæmolytic streptococcus, thought to be the cause of scarlet fever, has been used in the same manner to test its rash-blanching value. Quite apart from the question of the serum treatment of scarlet fever, this blanching power of the serum may aid in the differentiation of scarlet fever from rashes which resemble that disease. With this object a number of workers have been engaged in testing the value of this phenomenon in scarlet fever and to a lesser degree in other rashes. There is no practical method of standardising this serum, and hence variation in the blanching power of different sera is to be expected, and actually the blanching is found to vary. Yet the variability of the blanching reaction does not appear to be wholly due to want of standardisation, for the same serum can produce varying degrees of blanching in different individuals. Further, it occasionally happens that it fails to produce any reaction in a case that appears to be clinical scarlet fever, though reacting well in others. In such instances even the expert clinicians will remember their frailties and be prepared to admit that after all the serum test may be the better guide. There may be other explanations of this failure. For example, if a rash has been established some days it is possible that it might blanch less readily, and if it was a pronounced one perhaps not at all. This point has not yet received the attention that it no doubt will.

The Schultz-Charlton reaction varies in its intensity, in the size of the blanched area, in its time of appearance, and in the time it lasts. Further, it may vary with the amount of serum introduced and, as would be expected, it varies in the same person with differing dilutions of serum, though not always so if the dilution be not very great. The intensity of the reaction varies from the complete local blanching of the rash to a faint fading which is difficult to see. Complete blanching is common enough, but it is also quite usual to see in an easily observed and partially blanched area the punctæ of the scarlet fever rash. When human serum was used it was found that the size of the area varied from about half an inch in diameter to two inches, but the quantity introduced was from 0·7 to 1 c.cm. The horse serum, in dilution, now being used in doses of 0·2 c.cm. results in a blanched area, or partially blanched area, varying from about half an inch in diameter to one inch. The interval from the time of injection to the commencement of the blanching is usually from 12 to 24 hours, but it may unusually be postponed for even 48 hours, and has been observed as early as 3½ hours. The blanching usually remains clearly visible for about two days, though punctæ commonly reappear within the area earlier. On the other hand, the blanching may remain until the rash disappears, and even afterwards may show as a non-desquamating area surrounded by the usual pin-point and pin-hole desquamation. Further, it occasionally happens that the rash fades quickly without a blanching reaction arising.

This serological test has been applied to a number of other rashes, such as serum rashes, measles, rubella, influenza rashes, and other erythemata without blanching arising. The test is therefore a promising one from the point of view of differential diagnosis, but more observations are desirable to prove, if it can be proved, that the reaction occurs in scarlet fever only.

THE FUNCTIONS OF THE HOME OFFICE.[1]

A SCHEME has been set in motion for publishing accurate and authoritative information in an accessible form concerning the great Departments of State. The volumes are to be termed the "Whitehall Series," and it opens with Sir Edward Troup's book. If the excellent precedent thus formed is followed the series will be useful to all who are interested in the government of the country, and the number of people who to-day try to get an intelligent grasp of the principles upon which they are legislated for is an increasing one. Among these people are Members of Parliament themselves who do not take their seats, either in the Upper or Lower Chamber, as jurists or as administrators, and who are for the most part—we say it respectfully—as ignorant as many of us of how things are done at Whitehall. Civil servants, again, should find in these volumes information about other offices than their own, and municipal workers, students of administrative methods, and journalists will find them useful books of reference. How often do most of us want to know in whose jurisdiction a certain activity lies, and where to find detailed information concerning it? Sir Edward Troup, who was Permanent Under-Secretary of State for the Home Office from 1908 till 1922, is brief and modest, but we are glad to see that space has been made to include a history of the origin and development of the powers and functions of the Home Office, for over and over again it happens that the meaning of the legislation of to-day becomes clear when the conditions which gave rise to it, now forgotten, are brought to light. To a medical audience the chapters on police administration, on prisons and institutions like Borstal or Broadmoor, on the control of immigration and the question of aliens, and especially on the Factory Acts and workmen's compensation will be particularly welcome. We are glad to see that Sir Edward Troup states definitely that the time has arrived for a further consolidation of the Factory Acts, for we consider that the delay in introducing the Home Office Bill on the subject is most unfortunate. All who are in touch with the administration of these Acts know that the law requires amending, simplifying, and strengthening. Other sections of particular interest to our readers will be those dealing with intoxicating liquors and dangerous drugs, and an informing chapter on public morals and public amenities.

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[1] THE LANCET, 1923, ii., 1359.

[1] The Home Office. By Sir Edward Troup, K.C.B., K.C.V.O., Permanent Under-Secretary of State in the Home Office, 1908–1922. London and New York: G. P. Putnam's Sons, Ltd. Pp. 267. 5s.

The succeeding volumes of the series, as announced, are as follows: "The Ministry of Health," by Sir Arthur Newsholme; "The Admiralty," by Sir Oswyn Murray; "The India Office," by Sir Malcolm Seton; and "The Post Office," by Sir Evelyn Murray. The series is issued under the general editorship of Sir James Marchant.

AN UNUSUAL CASE OF PREGNANCY.

MANY cases of pregnancy have been recorded in which the woman was unaware of her condition, usually through sheer ignorance, until the moment of parturition, but it must be rare for a married woman with three children to go to term in a fourth pregnancy without any knowledge of her state, as occurred in a case reported by Dr. R. Beckers, of Brussels, in *Bruxelles Médical* for April 10th. The woman was 30 years of age and had three children, aged 3, 4, and 5. Her three pregnancies and confinements had been perfectly normal and there was no history of any gynæcological complaint. She woke one morning to find the sheets soaked with a clear and copious vaginal discharge and 24 hours later she was delivered of a living child weighing about 5½ pounds, labour being associated with the expulsion of a considerable excess of amniotic fluid. Inquiry into her history revealed that she had menstruated regularly each month for the usual number of days, that she had felt no movements, nor had she suffered from any malaise or digestive disturbance. The larger size of her abdomen had not attracted her particular attention since previous pregnancies had left the walls lax and she attributed any swelling to her habitual constipation. Her breasts had shown no alteration from the state in which they had been left by previous pregnancies. Dr. Beckers examined the patient about 20 hours before delivery and he found a uterus enlarged to the size expected at about five or six months, with very exaggerated ballottement of a fœtus, no movements of which could be felt, nor could any fœtal heart sounds be heard. The case is of interest both from the obstetric and legal points of view. It adds another to the list of cases where losses of blood at monthly intervals have occurred during pregnancy, which losses were indistinguishable from the phenomena of normal menstruation; and the hydramnios which was present could not be accounted for by any trouble in previous confinements, by any signs of cardiac or renal disease, the Wassermann reaction being negative. From the legal point of view the existence of pregnancy in a comparatively intelligent multipara without her knowledge is important in view of the responsibility of the doctor called in to deal with the first symptoms of labour in such a case.

APPLETON'S.[1]

REMINISCENCES of a great publishing house are always of interest, and those of the house of Appleton have a special interest for the medical profession owing to the amount of medical and surgical literature which emanates from that source. The founder of the firm was Daniel Appleton and the book business was at first merely a small section of a general store mainly devoted to dry goods. This was in 1825. By 1830 the general store had become solely a bookstore and in 1831 the first book was published. This was some 3 inches square, was entitled "Crumbs from the Master's Table," and from a reproduction, as an illustration, of two pages we see that it consisted of devotional commentaries upon certain texts of scripture, and was not, as stated, made up entirely of verses from the Bible. In 1832 appeared the book which was in a way the forerunner of the host of medical books hereafter to be issued, called "A Refuge in Time of Plague and Pestilence," being a devotional commentary on the 91st Psalm which the writer considered as entirely relating to plague. It appeared at an opportune time, for cholera was then devastating the country. The present head of the house, William Worthen Appleton, is the grandson of the founder, who seems to have had an innate flair for publishing. For the founder recognised the charm of Lewis Carroll's "Alice in Wonderland" at its first appearance and bought a number of sheets for publication in the States. He also brought out the "Uncle Remus" stories, and no doubt reaped the rewards of his perspicacity in both instances. To medical men his chief service was the part which he played in the publication of Osler's "Principles and Practice of Medicine," but the account given by Mr. Overton of the transaction is not altogether in accordance with that given in a letter from Osler himself, to be found in Prof. Harvey Cushing's biography, reviewed in another column of this issue. Appleton was, in addition, the publisher of Herbert Spencer's writings in the United States, and Mr. Overton gives some amusing letters from Spencer to his publisher which well show the wretched valetudinarianism of the former and his perpetual sense of injury. Thus he complains bitterly of his health: "You in common with most people do not understand what a thorough invalid I am. At the end of last August (the date of the letter is May 24th, 1901) I had rather too long a conversation with a gentleman who came to see me at Bepton, and the result was that I have never been up to my low level since; I have not taken a drive since last August, and for six months was never out of doors until a fortnight ago, when an experiment in a bath-chair did me great harm." For all this Spencer died in his eighty-third year. Mr. Overton's brochure will appeal to all lovers of books.

THE DOUBTFUL VALUE OF IODINE IN TUBERCULOSIS.

Two papers on the treatment of tuberculosis with iodine have appeared recently in the French medical press. They are typical of two widely different mentalities and schools of therapeutics. The one may be said to represent faith without reason, the other reason without faith. The first school is represented by the paper written by Dr. S. Bonnamour and Dr. P. Delore in the *Journal de Médecine de Lyon* for April 5th. The authors' presentation of their thesis is crisp, dogmatic, and admirably parsimonious in words. They state that iodine may be given by the mouth, by intramuscular injection, by inhalation, or by intravenous injection. It may be given in large or small doses, and a variety of preparations, ranging from the simple tincture to the semi-mystic "colloidal electro-chemical" preparations, may be tried. The authors then proceed to state the indications which are perfectly simple. If the disease is chronic, stationary, or, better still, in the pre-tuberculous stage, iodine is indicated. It is contra-indicated in those cases which do not terminate in recovery by natural means, "natural means" being a euphemism for freedom from medicamentary interference. In this paper there is no account of the rationale of treatment with iodine; even that notorious guinea-pig which has recovered from tuberculosis under a certain treatment is not dragged into the discussion. As for the clinical results of the authors' treatment, we learn nothing until the last three lines of their paper is reached, when we read that their results will be published in a later paper. Very different is the quality of the second paper, published by Dr. S. I. de Jong and Dr. J. Christophe in the *Presse Médicale* for April 8th. Before the war they carried out experiments on guinea-pigs which were infected with tubercle bacilli and treated with iodine in different ways. It was found that the action of iodine on the tuberculous processes was, if anything, detrimental. After the war, the authors tested the action of iodine on

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[1] Portrait of a Publisher; and the First Hundred Years of the House of Appleton. By Grant Overton. London and New York: D. Appleton and Company. 1925. Pp. 96. 3s. 6d.

40 patients suffering from pulmonary tuberculosis. They first gave iodine by the mouth in the form of the tincture, the dose of which was gradually increased. They found that nausea and gastric disturbances contra-indicated this procedure, which they abandoned in favour of intravenous injections of iodine methylate of hexamethylenetetramine. In most cases this treatment was well tolerated and could be continued for months with impunity. But as many as nine patients suffered from hæmoptyses during this treatment, and in 30 cases there was no evidence of even transitory improvement as a result of the injections. Only in ten cases could any improvement be noted, and in none of these ten did the improvement last long. In no case did tubercle bacilli disappear from the sputum or the temperature show improvement. A carefully documented report like this may not be palatable literature for the enthusiastic therapeutist who wants to be "up and doing," but it is bound to command the respect of all who consider therapeutics a science stripped of empiricism.

MALARIA UNITS IN PALESTINE.

MALARIA has played an important rôle in the historic development of Palestine, where the disease is attracting the close attention of the present Zionist organisation. In Palestine the malaria season coincides with the breeding of the main species of anopheles, commencing at the end of March and lasting to the end of December. Thus there are but three short winter months when the infection is quiescent. The Malaria Unit has spread its activities, the most important of which were the control demonstrations designed to establish the possibility of reducing malaria in Palestine on a large scale at a low cost. These demonstrations are described in the annual report for 1923 of the Malaria Research Unit at Haifa, which is maintained by the American Joint Distribution Committee in coöperation with the Government of Palestine. Simultaneously with these demonstrations the unit was enabled to amass a considerable amount of useful information regarding the prevalence of malaria in different parts of the country and to pay attention to the commoner species of anopheles. The permanent elimination of breeding places of anopheles has also been aimed at. In some cases coöperative drainage undertakings were stimulated by contributing to the communities part of the cost in money or in labour. The laboratory of the unit has contributed greatly to the success of the work. It examined thousands of blood-films for the determination of blood-indices, and in studying other special problems it has proved itself an important part of the general organisation of the unit.

PROTECTION OF UNDERGROUND WATER.

THE Ministry of Health has published a report of the Advisory Committee on Water[1] setting forth the conclusions of a subcommittee upon the protection of underground water-supplies against depletion and pollution. There is happily an ever-growing demand for a higher standard of purity in water-supply. There is also, it need hardly be said, an ever-growing demand for quantity in supply. The expansion of urban areas and the requirements of baths, sanitation, and street watering have multiplied the consumption of water per head of the population. We can no longer afford waste or want of coordination. We have, it is true, the Public Health Acts provisions as to sewage and nuisance, the Rivers Pollution Acts (hard as they are to apply), and the by-laws of local authorities as to cesspool construction and proper scavenging. But, as the subcommittee points out, the general provisions of the law seem directed towards protecting surface water rather than underground water. Science as applied to sanitation has evolved improved methods of sewage purification and refuse disposal. But science as applied to the engineering side of mining and of water-supply has also evolved improved methods of large-scale pumping. There is evidence, especially in colliery districts, that new perils assail underground water-supplies. The subcommittee describes the kind of case it has had to consider. Heavy pumping at a colliery opens out fissures and draws in sea water, thus increasing the proportion of salt in the well of a water company nearer the sea. An East Kent colliery pumps water from strata below the chalk and discharges it on the surface in large quantities; the result is that the water finds its way back to the underground sources of water-supply in a contaminated state. Another colliery elsewhere pumps huge quantities of water to waste within a water company's statutory limits. In Flintshire lead-mining operations have tapped the source of St. Winifred's well at Holywell, drying up what was part of the local authority's source of water-supply as well as destroying the virtue of a place of ancient pilgrimage. Such examples might be multiplied. A casual glance through our local Acts of Parliament will discover cases where the needs of water-supply have required protection in the grant of fresh powers to public undertakings. Meanwhile the common law of the ownership in underground water is so remarkably unfair, the contamination of water by adjacent operations is so difficult to prove, and the cost of litigation is so high, that fresh legislation certainly seems necessary.

The recommendations of the subcommittee may be summarised thus. The Ministry of Health should have power to schedule areas (after due notice and local inquiry) for protection. Inside those areas no fresh wells (except for domestic or farm purposes) and no fresh mine-shafts should be sunk without a permit from the Minister, who in mining cases would act in consultation with the Mines Department of the Board of Trade. To prevent pollution, all statutory water undertakings should be given the powers (which some already possess by local Act) of protecting their supplies by acquiring adjoining land, limiting its use, or requiring particular measures of drainage. Compensation would be given to interests injuriously affected. The Ministry of Health should have power to obtain returns of water pumped to waste. The borings of mining companies might be tubed and made water-tight. The specific strengthening of Sections 61 and 62 of the Waterworks Clauses Act of 1847 is recommended, and also (as already indicated) the general application of clauses now found only in local Acts, together with the comprehensive consolidation of the whole public law of water-supply. Some legislative action certainly appears essential. The problem of reconciling conflicting interests is not more difficult than that which Parliament managed to solve in the Mines (Working Facilities and Support) Act of 1923.

ORIENTAL SORE IN A NEW CENTRE IN PALESTINE.

IN the *Archiv für Schiffs- u. Tropen-Hygiene* for March Dr. A. Dostrowsky, of the Hadassah Medical Organisation in Jerusalem, tells us that Jericho is the only endemic area of Oriental sore (cutaneous leishmaniasis) so far known in Palestine, but reports that another has been found at Artuf, a small Jewish village of 114 inhabitants, 941 feet above the sea, on the other side of the Judæan hills from Jericho, with quite different flora, fauna, and physiography. It is two hours by train from Jerusalem. The resident doctor saw the first case in the summer of 1923, in a man who had not left the village for eight years. Altogether ten cases were seen, of all ages, and in only four families; in one family five children were attacked. How are such cases spread? Dr. Dostrowsky suggests it is by phlebotomi. The village had hardly known these flies till 1923, when, in the summer, they became a plague. The villagers live in two-storied houses, their cattle on the ground floor. That only four houses were infected is to be correlated with the known habits of phlebotomi which gather, apparently without reason, in one house and leave the next alone; bugs and fleas distribute themselves more evenly. The sores are not spread by auto-infection through scratching, for even if the patient is lousy (many of them are very poor) and scratches freely, the later sores are, like the earlier, found only on the uncovered surfaces. The carrier, if any, of this outbreak cannot be traced; no stranger came to the valley in 1923. Cases are frequently seen in Jerusalem, but only in visitors; never has a patient who has returned to his home there been known to infect his relatives. Dr. Dostrowsky's view that Oriental sore is spread by an insect, most likely by a phlebotomus, has a good deal to support it.

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[1] H.M. Stationery Office. 1924. No. 112. 9d.

INTERNATIONAL MEDICAL FELLOWSHIPS.

One of the most valuable gifts which an advanced scientific worker, whether at the bedside or in the laboratory, could hope to receive would be the opportunity of a period of intimate association with those engaged in studying similar problems in other countries. Until recently this privilege was hardly available except by private arrangement, but some three years ago the Rockefeller Foundation of New York allocated a fund of $50,000 to the Medical Research Council for the provision of Fellowships of Medicine tenable in the United States upon the award of the Council during a period of three years.

The Council, in giving public notice of these Rockefeller Medical Fellowships, announced their intention to award the Fellowships, in accordance with the desire of the Foundation, to graduates who had received training in research work in the primary sciences of medicine or in clinical medicine or surgery, and were likely to profit by a period of work at a university or other chosen centre in the United States before taking up positions for higher teaching or research in the United Kingdom. The first four Fellows appointed under the scheme worked in the United States during the academic year 1923–24. Dr. J. C. Bramwell was engaged in clinical and laboratory studies of diseases of the cardio-vascular system, chiefly with Prof. Erlanger at Washington University, St. Louis. Mr. N. M. Dott did clinical and experimental work in neurological surgery, with Prof. Harvey Cushing at the Peter Bent Brigham Hospital, Boston. Dr. Helen Ingleby worked with Dr. Adolph Meyer in the psychiatric clinic at the Johns Hopkins Hospital, Baltimore, on the morbid histology of the central nervous system. Dr. H. K. Ward was engaged in experimental work on the treatment of tuberculosis and on other subjects, chiefly with Dr. Zinsser in the Department of Bacteriology, Harvard Medical School, Boston. For the academic year 1924–25 Rockefeller Medical Fellowships were awarded to Mr. R. K. Cannan, Dr. J. J. Conybeare, Dr. J. R. Learmonth, Dr. Ethel M. Luce, Dr. J. W. McNee, and Dr. W. Robson. Full particulars and forms of application for Fellowships for the academic year 1925–26, which will shortly be awarded, are obtainable from the Secretary, Medical Research Council, 15, York-buildings, Adelphi, London, W.C. 2, with whom applications must be lodged before June 10th, 1925. Each Fellowship has the value of not less than £350 a year for a single Fellow, with extra allowance for a married Fellow, payable monthly in advance; the terms are elastic, so that special circumstances of individual candidates can be taken into account. Travelling expenses and some other allowances are made in addition.

The recent announcement that the Commonwealth Fund of New York has decided to establish 20 annual Fellowships at American universities for British graduate students is also welcome. The amount of these Fellowships will probably be about £600 a year for three years and the holders will be appointed by a committee of award. The student will be allowed to select the university in which he wishes to study, but not more than three Fellowships will be awarded at any one American university. Further details have not yet been announced, but since the members of the British Committee of Award include Sir Hugh Kerr Anderson, F.R.S., it is certain that the claims of medical graduates will receive a sympathetic hearing. These last-named Fellowships are largely made possible by donations amounting to over £5,000,000 from Mrs. Stephen K. Harkness to the Commonwealth Fund, towards the promotion of a closer understanding between Great Britain and the United States. It would be difficult to imagine a better way of achieving this object.

THE INFANTS HOSPITAL.

The festival dinner of the Infants Hospital, Vincent-square, was held last week, by permission of the Corporation, in the Guildhall of London, under the presidency of H.R.H. Prince Henry, who made an excellent speech in proposing the prosperity of the institution. He pointed out that the hospital was the first of its kind to be established in Europe, and he appealed for the sum of £25,000, required for the further expansion of work whose objects included the placing on a scientific basis the management of infants up to 5 years of age, the treatment of nutritional diseases, and the investigation of the causes of infantile mortality. His Royal Highness stated correctly that some 40 per cent. of our infantile mortality is preventable, and amusingly concluded by pointing out, without intention, one of the main difficulties in connexion with prevention. He said that he had not known until he visited the Infants Hospital how complicated the feeding of infants is; but the general public, when for this reason or that the natural methods of sustenance fail, are in the same plight. Part of the work of the Infants Hospital is to spread knowledge. Mr. J. Gomer Berry, the chairman of the Hospital, spoke of the growing prosperity of the institution, of the attraction which it exercised for patients all over the country, and of the value of its researches, which were placed at the disposal of every doctor. He announced the gift from the Prudential Assurance Company of £1000 for the cost of an X ray installation, accompanied by a promise to maintain five beds. Lord Birkenhead proposed the medical and nursing staff of the Infants Hospital, and spoke of the movement which it represented as reflecting exactly the growth of our national responsibility for the physical welfare of the nation. Dr. Eric Pritchard, the medical director, having replied, it was announced that the donations had reached £15,000, about one-third of which sum was represented by the endowment of nine cots. We understand that a considerable further sum has since been received, so that the authorities of the Hospital can recognise that the stamp of public approval has been put upon their endeavours.

THE MEDICAL CAREER OF JOHN KEATS.

Sir William Hale-White, by his paper on the Medical Career of John Keats, delivered as the annual oration of the Medical Society of London on May 11th, added a valuable contribution to our knowledge and love of the man who is "numbered among the inheritors of unfulfilled renown with Catullus and Marlowe, with Chatterton and Shelley, whom we mourn as doubly dead in that they died so young" (Osler). Much has been written on Keats, but touching his career as a medical student surprisingly little, and that has often been wrong. Known to have been a surgical dresser, it is usually assumed that he was unqualified. But the medical profession has complete justification for regarding him as definitely one of us, and Sir William Hale-White exhibited on the epidiascope the actual pass list of the Society of Apothecaries as published in the "London Medical Repository," 1816, containing the entry: "John Keats, Wilston, Edmonton."

Keats was born in October, 1795, and in 1803 went to a school kept by John Clarke at Enfield. He left school at the age of 16 to begin his apprenticeship to Mr. Thomas Hammond, surgeon, of 7, Church-street, Edmonton. Thomas Hammond's house, "Wilston," is at the present day named "St. Winifreds," and is still occupied by a medical man. Close by the house is a little cottage in which Keats and his fellow apprentice were housed, but this tiny building has recently been condemned, and will soon have disappeared. Keats was articled to Hammond for five years, but at the end of his fourth year he left to "walk the hospital" at Guy's, and his name is inscribed in the register of physicians' and surgeons' pupils and dressers in 1815. The notes which Keats took when attending lectures on anatomy and physiology have been preserved in a small grey-green notebook in boards with frayed edges at present in the Dilke Collection at the Hampstead Public Library. The orator showed on the screen a facsimile of that notebook, and he expressed his gratitude to the mayor of Hampstead for allowing him to have the facsimile made. Following the name "John Keats" on the inside cover are 28 pages of neat well-spaced notes on descriptive anatomy, notes which must obviously have been made at the writer's leisure. These notes occupy the left-hand pages, while the right-hand pages are filled with closely written, often misspelled records of physiology lectures, which sometimes run over into the margins of the anatomy notes. This contrast has led some authorities (as Sir Sidney Colvin) to say that Keats obtained some other student's anatomy notebook and used it for his own physiology notes, but Sir William Hale-White considered that all the writing came from the same hand, the varying circumstances of time and pen accounting for discrepancies. The anatomical notes were clearly made before the physiological ones, and surgical annotations are often added. The course in physiology as described in the notebook consisted of 12 lectures, the ninth of which Keats apparently did not attend, each on a separate subject. The lectures, Sir William Hale-White said, were good, up to date, and practical, each being illustrated by applications to medicine and surgery. Who was the lecturer? Keats does not name him, but six times in the anatomy lectures and 14 times in the physiological he refers to a "Mr. C." The *Medical and Physiological Journal* for the years 1814–15–16 gives the names of four lecturers in the combined schools of St. Thomas's and Guy's, all of whose names begin with "C"—Astley Cooper, Henry Cline, Curry, and Cholmedley. Curry and Cholmedley lectured on medicine alone, and can therefore be excluded, but both Cooper and Cline taught physiology. Cline's series of lectures, however, began with the muscles of the head, and as Keats's notes do not treat of these we may assume that the lecturer was not Cline, but Mr. (as he was then) Astley Cooper. And the evidence is strong that the anatomical notes were also derived from Astley Cooper. Sir William Hale-White, comparing some of Astley Cooper's lectures, published in 1824, with Keats's notes, found such similarities as follows: Astley Cooper—Koskiusco had his sciatic nerve wounded by a pike; Keats's notes—Patient K. had sciatic nerve wounded by a pike. The evidence is therefore conclusive that the whole of Keats's notes are from lectures by Astley Cooper. Lectures were a very important matter in those days, but the most dramatic part of the student's life was to attend operations, an unpleasant business. The orator quoted South's description of the scene in the operating theatre—the heat, the foulness, the screams of the wretched patient, and the struggle of students for front places when the operator was popular, as Astley Cooper was. Such scenes must have had a horrifying effect on the sensitive poet, and Astley Cooper, a true friend to his students, seems to have noticed Keats among the crowds who sat at his feet, and to have put him under the special care of his relation, George Cooper.

While attending Guy's Hospital, Keats at first lived alone in what was then 8, Dean-street in the Borough, since built over by the coming of the railway. On Astley Cooper's advice he went, in January, 1816, to lodge with Henry Stephens and George Wilson Mackereth in St. Thomas's-street. At this time he was much occupied with poetry, but he qualified, as has been said, in July, 1816. He had still seven or eight months of a dressership to complete, but there is not a line to show that he ever went back to hospital, and he certainly never became a practitioner. During his medical studentship the orator said there were two Keats in one body. The one was (as shown by his notes, by the rapidity with which he qualified, and by the ease with which he passed his examination) a diligent medical student, sufficiently outstanding to attract the attention of the great Astley Cooper; the other was the poet. He would sit so often in the window-seat of his lodgings in St. Thomas's-street that it was called Keats's place. The story was that here, dreamily resting one evening while Stephens was studying medicine, the young poet broke out with the announcement that he had composed a new line. "A thing of beauty is a constant joy," he recited, asking, "What think you of that, Stephens?" "It has the true ring, but is wanting in some way," said Stephens, and went on reading. An interval of silence, and then Keats broke out with, "A thing of beauty is a joy for ever"—and thus was born in St. Thomas's-street one of the imperishable lines of English poetry.

JAUNDICE IN THE GERMAN NAVY.

In the March number of *Marine Rundschau*, a non-medical review dealing with naval interests, Marine Stabsarzt (Surgeon Lieut.-Commander) Dr. Heinrich Ruge gives an account of jaundice as a cause of invaliding in the German Navy. Between 1919 and 1923 he saw 1300 cases of jaundice, quite apart from cases of Weil's disease of which the exciting cause is definitely known. In these cases, commonly called "catarrhal"—although the term, according to Dr. Ruge, lacks pathological basis—the liver is usually enlarged, and may be tender. There is little risk to life, for only about one case in 900 is fatal, but great loss of service, inasmuch as cases are apt to be off duty for a month. Attacks often follow bouts of extra exertion, particularly when the places where work is done are badly ventilated, and for this reason, perhaps, bluejackets suffer less frequently than other men on board ship. An element of infection may be present, for of 19 officers who contracted jaundice 6 were medical officers, and the incidence on the sick-berth staff was also unduly high. The high prevalence of jaundice among the young recruits is ascribed by Dr. Ruge to impaired liver function dating from underfeeding during war-time. Dr. Ruge refers to the much-increased frequency of jaundice after salvarsan injections, which suggests to him that a liver, badly nourished as it was developing, is affected more seriously by both syphilis and salvarsan.

Manchester's Scheme to Aid Hospitals.—A new movement on behalf of the voluntary hospitals is being started in Manchester with the object of bringing the appeal for funds home to many people whose pockets are hardly touched at present, for the Hospital Saturday and Hospital Sunday collections do little more than touch the fringe of the population. Divisional committees corresponding to the Parliamentary divisions are now being formed, and these committees are to work in turn through newly formed ward committees. Each ward is to aim at raising £2000 by inducing people who do not make a regular contribution to the hospitals to make a weekly, monthly, or annual contribution. Every kind of society in the different divisions—social, political, or artistic—will be appealed to help the committees to reach these untapped sources of income. The annual deficit of the Manchester hospitals is £50,000, and there is a waiting list of over 2000 patients. It is sought to obtain £70,000 annually to cover the annual deficit and to allow for new expenditure on buildings.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CXXII.—THE TREATMENT OF TACHYCARDIA.

Tachycardia may be due to a variety of causes, and is a condition which for two reasons may demand treatment. In the first place, rapid heart action, quite apart from any associated structural lesion, seriously impairs the efficiency of the circulatory mechanism. A heart which beats rapidly when the body is at rest lacks reserve power. It is severely handicapped when called upon to increase its output in response to an increased demand of the muscles for oxygen during physical activity.

And, secondly, tachycardia may make itself distressingly manifest to the sufferer in the form of palpitation. When this is so, he is continually being reminded that there is something the matter with his heart; and this aggravates his condition by adding to the other disabilities from which he is suffering an element of constant mental anxiety. Even in the absence of palpitation, tachycardia, discovered perhaps by accident, will afford a fertile source of worry to the introspective patient. He keeps feeling his pulse, and each time he does so the gruesome features of the bogey of heart disease loom more clearly before his eyes.

Differential Diagnosis.

In health the rhythmic stimuli which excite the heart to contract arise in a group of specialised cells situated in the wall of the right auricle and known as the "normal pacemaker" or the "sino-auricular node." In accordance with the functional activity of this pacemaker, every case of tachycardia may be classified in one of two groups: either (1) *the primary tachycardias*, in which the disturbing factor lies within the heart itself—in these the stable government of the sino-auricular node has been temporarily or permanently replaced by a revolutionary régime; or (2) the *secondary tachycardias*, in which the rapid action of the heart is a mere secondary manifestation, indirectly or reflexly produced, by a lesion, or by the effects of a lesion, in some other organ of the body. Here the stable government is still in power, but has been obliged temporarily to modify its policy in response to urgent pressure from outside.

Secondary Tachycardias.—There are two simple and extremely important criteria in the diagnosis of secondary tachycardia: (1) the heart's rhythm is regular, and (2) the heart rate is highly susceptible to variation in response to changes of posture or emotional disturbances. If the pulse exhibits these two features, and if there be no rheumatic history or other evidence suggestive of an organic lesion, in my opinion, tachycardia, *by itself alone*, never justifies a diagnosis of heart disease.

Most of the cases of rapid heart action which we meet with in practice are secondary tachycardias, and it is extremely important to realise that, in them, the heart is not primarily at fault; the mere fact that in such cases we can assure the patient that his heart is perfectly sound will prove to be a psychotherapeutic factor of real value.

The treatment of cases in this group is essentially the treatment of the underlying condition, for with the elimination of the toxic or nervous factor which is bringing pressure to bear upon the heart the tachycardia automatically subsides. The simple tachycardia of Graves's disease, or of early pulmonary tuberculosis, that associated with various febrile conditions, or met with during convalescence from almost any acute illness, the tachycardia of neurasthenia, or that which occurs in perfectly healthy individuals as the result of some emotional disturbance, are all secondary tachycardias, and they are all generally easy to recognise.

In all types of secondary tachycardia, including "D.A.H.," any therapeutic measure which tends to direct the patient's attention to the heart is definitely harmful and should be most carefully avoided.

Primary Tachycardias.—In the treatment of the primary tachycardias, as in all forms of chronic heart disease, the restriction of physical exertion is of fundamental importance. The extent to which the patient is able and willing to adapt his mode of life to the limitations of his impaired cardiac reserve will largely determine the success or failure of any line of treatment. The diet should be such as will not cause flatulent distension of the stomach; the bowels should be carefully regulated, and excessive intake of fluid avoided.

As regards drug treatment, the practitioner has to decide whether he will strike at the root of the trouble and endeavour to restore the normal cardiac mechanism, or whether he would not do better to neglect the relatively unimportant auricle and concentrate upon the ventricle. He should ask himself three questions: (1) What chance is there of restoring the normal cardiac mechanism? (2) Is the normal mechanism, when restored, likely to be maintained? (3) To what extent is the patient likely to be benefited by the restoration of the normal mechanism?

Auricular Fibrillation.

The rapid heart action associated with auricular fibrillation is by far the most common of the "primary tachycardias." The features of this disorder, irregularity of the pulse both in rhythm and volume, numerous unproductive beats, which can be recognised by auscultation, but fail to reach the wrist, or even to open the aortic valves, and the commonly associated signs and symptoms of heart failure with venous congestion are characteristic and well recognised. In most cases the rapid ventricular rate is alone sufficient to account for the additional impairment in circulatory efficiency which accompanies the onset of fibrillation. It curtails diastole and thus hinders the filling of the ventricle, and it tires out the heart by frequent contractions, many of which are so premature that they serve no useful purpose. It is not surprising, therefore, that, without attempting to remedy the auricular mechanism, one can greatly improve the circulation by merely controlling the ventricular rate by means of digitalis.

The particular preparation selected is largely a matter of individual preference, but for general use either the tincture or the powdered leaf is eminently satisfactory. The larger dose of the infusion renders it less suitable when the drug is being given in large quantities, and the various proprietary preparations which I have tried appear to be less reliable in those cases of heart failure which demand immediate relief.

Recent work in pharmacology has shown that, in man, the absorption of digitalis from the alimentary canal is complete in six hours after administration, whereas the absorption of strophanthus from the alimentary canal is both poor and extremely variable. Full digitalisation can be rapidly obtained by the oral administration of massive doses. This procedure is perfectly safe provided the patient has not previously been taking digitalis or strophanthus, and provided that we allow an interval of six hours between successive doses. Morphine, gr. ¼, combined with the first dose of digitalis often brings great relief, by securing a few hours of much-needed sleep. The rate of elimination of digitalis from the body is such that, if necessary, a patient can take about 15 minims of the tincture per diem, over long periods of time, without any risk of cumulative effect.

The alternative plan of campaign is to attempt to restore the normal mechanism by means of quinidine, a procedure which requires careful supervision. In over 50 per cent. of cases of auricular fibrillation, normal rhythm can be restored temporarily by the use of quinidine, but it is only in a very much smaller number that the normal rhythm is permanent. When the symptoms are directly and mainly attributable to the presence of an abnormal rhythm, the results of quinidine therapy may be highly satisfactory; but when the myocardium is severely and permanently damaged control of the ventricular rate, by means of digitalis, is likely to yield greater benefit to the patient than the restoration of the normal rhythm, which is often too rapid for the damaged heart.

The procedure which I usually adopt, first having got the patient fully digitalised, is to give an initial dose of 3 gr. of quinidine, either as a powder or in the form of a cachet, and then, after waiting 12 hours to guard against the possibility of any idiosyncrasy to the drug, I give 6 gr. every three hours for five doses, and if necessary repeat this procedure on the two succeeding days. My own personal experience suggests that, if the normal mechanism is not restored before the end of the third day, although it often may be restored later by prolonging the treatment, it is not likely to be permanent. Quinidine tends to increase the ventricular rate, and digitalis may be given simultaneously to counteract this action. Quinidine is withheld if the heart rate becomes excessive, and is discontinued as soon as the rhythm becomes regular or toxic symptoms supervene.

Auricular Flutter.

In auricular flutter the pulse is generally regular, and in the neighbourhood of 150 per minute, while the auricle is beating at double that rate, every second auricular impulse failing to reach the ventricle. The degree of block between auricle and ventricle can be increased by digitalis, and the ventricular rate satisfactorily controlled in this way. By pushing the digitalis treatment, flutter can be converted into fibrillation; and then, if the drug be discontinued, in some cases the fibrillation will be replaced by normal rhythm. Flutter may persist for many years; but, provided the ventricular rate be efficiently controlled by digitalis, this disorder appears to impose surprisingly little additional burden on the heart.

Paroxysmal Tachycardia.

In true paroxysmal tachycardia the attacks commence and terminate absolutely abruptly, and for no apparent cause; the heart without warning suddenly switching over, in a single cycle, from the normal to an extraordinarily rapid rate of beating, often in the neighbourhood of 200 per minute. In any condition such as this, where the attacks are liable to occur at irregular intervals and to terminate spontaneously, it is exceedingly difficult, if not impossible, to assess the true value of the therapeutic agents which we have employed. Various methods of aborting the attacks have been advocated by different physicians, but none has proved infallible; and one is bound to admit that, at the present time, we know of no really reliable method of combating this disorder. Sometimes vagal stimulation, either direct, by pressure in the neck, or reflex, by the induction of vomiting or forced deep respiration, will abort an attack, but more frequently such methods fail, and we have to be content with endeavouring to prevent the attacks by carefully eliminating any infective, toxic, or nervous exciting factor.

Before becoming permanently established, auricular fibrillation is liable to occur in paroxysms which alternate with periods of normal rhythm. Although it may hardly seem justifiable to draw any conclusions as to the results of treatment in such paroxysmal attacks, quinidine does appear to yield good results.

Structural cardiac lesions are generally permanent, but derangements of function are often extremely amenable to treatment; by appropriate management and drug therapy we can do much to restore balance, to relieve symptoms, and to enable the heart, even when badly damaged, to carry on its functions in a fairly satisfactory way for long periods of time.

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Special Articles.

PROCEEDINGS OF THE ROYAL COMMISSION ON NATIONAL HEALTH INSURANCE.[*]

(Continued from p. 995.)

EVIDENCE OF THE BRITISH DENTAL ASSOCIATION.

(App. XIX.) The British Dental Association submitted evidence on the dental treatment at present available, the need for the extension of dental treatment and for its establishment as a permanent statutory benefit, and the scope of such a permanent service.

The evidence was given by Mr. J. H. Badcock, President-elect, Mr. E. Y. Richardson, and Mr. B. J. Wood.

Early Recognition of the Need for a Public Dental Service.

Organised schemes of dental aid for persons who could not afford private dental fees were not unknown prior to the Insurance Act. Following upon the passing of the Act of 1911, and independently of State support or recognition, a scheme for a Public Dental Service to be available for all persons coming under the age-limit of the National Health Insurance Act was drawn up and preparations were made for making dental treatment available under it in all parts of the country. The outbreak of the war prevented the realisation of this project, but it was revived after the 1918 valuations of Approved Societies, which set free surplus funds available for additional benefits, amongst which was included dental benefit.

Panels of Dentists.

The British Dental Association took the initiative in calling meetings throughout the country which every registered dentist was invited to attend, with the object of organising panels of dentists who would undertake to treat insured persons.

(App. XIX., 4–7. Q. 9212.) Up to the passing of the Act of 1921 the British Dental Association represented from three-fifths to two-thirds of the practising members of the profession. It has not so far admitted to its membership the "1921" dentists. When the panels were formed they soon felt the need for coöperation and for uniformity of action and control, and in December, 1922, combined to form themselves into the Public Dental Service Association of Great Britain, Limited. This Association numbers nearly 7000 members.

Criticisms of the Present System.

(App. XIX., 10–14. Q. 9228–9.) The present system was criticised by the witnesses on account of the unequal distribution of the benefits, the different proportions of payment met by the societies, and the fact that each dentist has to deal with a great number of different societies.

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[*] In previous articles the proceedings of the Commission were reported under the following headings: Introductory Note; The Scope of the Insurance Scheme (see THE LANCET, Jan. 31st, pp. 247–8); The Provision of Medical Benefit (Feb. 7th, pp. 301–3; Feb. 14th, pp. 355–6; Feb. 21st, pp. 403–5); Financial Provisions of the Act (Feb. 28th, pp. 454–7); Medical Certification and the Regional Medical Staff (March 7th, pp. 508–9); The Approved Societies and the Money Benefits (March 14th, pp. 564–5; March 21st, pp. 623–4); Evidence of the Hearts of Oak Society (March 28th, pp. 677–9); Evidence of the National Conference of Industrial Assurance Approved Societies and of the Manchester Unity Approved Society (April 4th, pp. 731–3); Evidence of Independent Order of Rechabites, of Rational Association Friendly Society, and of Miners' Societies (April 11th, pp. 784–6; April 18th, p. 839); Evidence of Mr. Alban Gordon (April 18th, pp. 839–40); Evidence of Joint Committee of Approved Societies, of Stock Exchange and Lloyds' Health Insurance Societies, and of Group of Catholic Approved Societies (April 25th, pp. 889–91); Evidence of the National Insurance Beneficent Society (May 2nd, pp. 943–4); Evidence of the British Medical Association (May 9th, pp. 993–5).

References to the paragraphs in the printed statements issued as appendices to the reports of the oral evidence are given thus: "App. X. 69," and references to the oral evidence thus—Q. 1369.

> If the individual dentist had to deal with one body, say the local insurance committee, for the whole number of his cases instead of having to deal with 300 or 400 societies as at present, all slightly differing, it would enormously lighten his burden of correspondence and would lead to greater efficiency in many other ways.

It was also suggested by the witnesses that although in some cases emergency treatment is definitely provided for in the arrangements, some societies, when a claim has been made, have repudiated it on the ground that a "dental letter" had not been completed. Even among members of the same society there is inequality of treatment owing to the fact that where the patient is unable himself to find a portion of the dentist's fee he has usually to decide to go without the treatment.

The statement sometimes made that about 7 millions of insured persons are entitled to dental treatment creates quite an erroneous impression. As already stated, so many members have to give up their claim to benefit because they are unable to pay. Further—

> Adolescents joining societies which give dental treatment as additional benefit are not eligible for such treatment when they join, but must wait a variable number of years before they become entitled to the benefit, thus losing the advantage of dental treatment at the very age when it is most needed and would do the greatest amount of good.

Perhaps the best that can be said about the present service is that—

> It has afforded opportunity for the experimental testing of a means of supplying dental treatment and has demonstrated that the members of Approved Societies are eager to take advantage of such facilities for dental treatment as have so far been provided.

The Need for an Extensive Scheme.

(App. XIX., 21–35.) Reports of Departmental Committees and of various authorities are quoted in an appendix to this evidence, and it is suggested that they prove up to the hilt the case for a wide extension of public dental service. Any campaign against national disease which neglects this, one of the chief outposts of preventive medicine, is making a tragic error. Also, the evidence states—

> Employers of labour who have established dental clinics for their workpeople are unanimous in testifying that, philanthropy apart, the treatment pays in increased efficiency of the worker and diminished loss of working hours through indisposition.

A Complete Service.

(App. XIX., 32–8.) The remedy for the present unsatisfactory provision is not an extension of additional benefit, but a complete scheme which would include :—

> (1) Dental treatment at maternity and child welfare centres ; (2) treatment during school age ; (3) treatment for adults and their dependants under an insurance scheme.

Such a scheme should embrace :—

> The extraction of teeth under local or general anæsthetics. The scaling of teeth and the treatment of inflammatory conditions of the mouth. The filling of cavities in carious teeth. The provision and repair of partial and complete artificial dentures.

(App. XIX., 42.) The most urgent necessity is a complete school dental service staffed and organised so that every school child during its entire school age has dental treatment of a preventive and curative nature. This service should be linked to, and should follow on, an equally complete scheme of dental treatment for children under school age and for expectant and nursing mothers.

> Until these services are effectively organised, adult dental treatment of the industrial classes must remain chiefly a matter of extraction of septic teeth and the insertion of dentures, which is a perversion of the highest requirements of public health and an outrage on common sense.

Medical Benefit Machinery Recommended.

(Q. 9220–30.) The witnesses suggested that the service for a statutory dental benefit should be controlled as regards the local arrangements by the Insurance Committee in the same way that medical benefit is at present administered ; that there should be a dental panel committee, a dental service subcommittee (for dealing with complaints), and regional dental officers.

The Cost of the Service.

(Q. 9245–6.) Careful analysis of various figures have resulted in the Association putting forward the suggestion that 5*s.* per head of the insured population is the best approximation that can be made at the present time of the cost of a complete service. The witnesses said, however, that the actual payment of the dentists by means of a capitation fee was not practicable. (Q. 9320.) Abuses under a system of payment for services might be checked by the proposed regional officers.

(Q. 9156–61.) On a 5*s.* basis it was pointed out to the witnesses that this would put roughly £500 a year into the pockets of every one of the 7500 dentists taking part in the scheme. The reply was that this would by no means represent all new income to the dentists, and that, in any case, the numbers would be nearer 10,000 than 7500.

An Adequate Supply of Dentists—and the Demand.

(Q. 9125–8, 9385.) The witnesses said that an adequate number of registered dentists would be forthcoming to run a satisfactory service for the whole insured population. A complete scheme could almost certainly not come into full being all at once, and as it grew the dental profession could be relied upon to meet the increasing demands.

(Q. 9230.) The average demand-rate was thought to be about 5 per cent., which gives 750,000 cases a year for an insured population of 15 millions.

Clinic v. Panel.

(App. XIX., 19–23.) The panel system was advocated as being readily adaptable to meet small or large demands and as facilitating free choice of dentist. The clinic system permits of the effective handling of large numbers where a continuous supply of patients is assured.

(Q. 9241–2, 9251, 9406–12.) The dental profession, in any case, would object to clinics with whole-time salaried officers controlled by Approved Societies ; they would not object to clinics organised by the dentists themselves or of arrangements made under which part-time dentists were paid a fee per session. Such clinics would permit of specialised treatment—X rays, violet rays, and ionisation—not always available in a private surgery. It appeared that in objecting to lay control the witnesses were visualising the possibility of interference with the professional treatment of a patient. They said they would not mind in the least control which was confined to administration and questions of discipline, provided that there was some dental representation on the governing body.

EVIDENCE OF OTHER DENTAL ORGANISATIONS.

British Society of Dental Surgeons.

(App. XX. Q. 9402–9626.) The evidence for this society was given by Sir Frank Colyer and Dr. E. W. Fish. They emphasised the importance of a national scheme for the prevention of dental disease and urged that prophylactic measures should have the first consideration. It was of great importance that the dependants of the insured should be included as soon as funds were available. In the meantime they made recommendations for an immediate scheme of treatment for the insured estimated to cost 3*s.* 6*d.* per head, and limited at present to (*a*) propaganda, (*b*) extraction of tender or hopelessly infected teeth under suitable anæsthetics ; and (*c*) scaling of the remainder. As regards administration, the formation of panels of dentists was suggested and generally the same machinery as for medical benefit. For the administration of general anæsthetics an addition to the medical capitation fee would be necessary.

A Clean Mouth More Important than Dentures.

The witnesses suggested (Q. 9498) that any insurance scheme should be limited to extractions and fillings, and that if patients wanted dentures they should provide them out of their own pockets. The provision of dentures was, it was suggested, not at all an essential to health, but was largely for matters of appearance. The "1921" dentists were far too prone to extract teeth and put in dentures, and generally the witnesses thought that there was room for propaganda amongst the dentists themselves as to the importance of preventive treatment and the preservation of the clean mouth rather than remedial treatment.

Public Dental Service Organisation.

(App. XXII. Q. 9787–10,060.) This evidence was given by Mr. J. Clifford Wing, the Chairman, and Colonel Howkins, Mr. A. H. Condry, and Mr. P. I. Wigoder. This association came into existence as a direct result of the demand for dental benefit out of the surplus funds of Approved Societies. It contains 7000 members and embraces the great majority of Insurance dental practitioners. The witnesses were whole-heartedly in favour of a large extension of dental treatment under the Health Insurance scheme and said that their cordial coöperation would be forthcoming. The cost of the provision of public dental treatment would, they suggested, be largely off-set by a reduction in the quantity of medical treatment needed.

They endorsed the earlier evidence as to the lack of uniformity in the present system of administration by various Approved Societies, as to the objections to clinics, and agreed that there would be an adequate supply of dentists forthcoming for a national scheme.

Linking-up Provisions.—They urged that any scheme of dental benefit would be defective which was not linked up with the existing provisions for the treatment of dental disease among children and which left any gap in the supervision and treatment of dental disease between childhood and maturity.

Scope and Cost of a National Service.—The witnesses suggested that professional opinion would be found almost unanimous in approval of the following schedule: Carefully organised propaganda as to the care of teeth, with a view to the prevention of dental caries and other disease; scaling of teeth and treatment of inflammatory conditions of gums; fillings; extraction of teeth under (1) local, (2) general anæsthetics; provision of (1) complete, and (2) partial artificial dentures. The cost on such figures as were available would be met by 1*d.* a week per insured person, but it was thought that this might be found to be an under-estimate. The witnesses indicated the order of precedence for these services (Q. 9829): (1) Extraction of teeth, (2) scaling and filling, and (3) the provision of dentures. Propaganda should, they thought, be carried out by the Dental Board. They disagreed entirely (Q. 9882) with the suggestion which had been made that it was not necessary for the health of an adult that he should have his bad teeth replaced by dentures.

Cost and the Safeguarding of the Funds.—The witnesses handed in the scale of charges agreed with the Approved Societies, which is a lengthy document and includes amongst other items: extractions with local anæsthetic 2*s.* 6*d.* a tooth up to three, and a maximum fee for upper and lower jaws of £1. For a full denture, upper and lower plates, including any necessary extractions, £6 10*s.* is paid. The capitation fee of 1*d.* per week per insured person suggested above was based, it appeared, upon the cost to an Approved Society under a scheme where the members themselves had to pay a part. The risk of an indefinite charge under a national scheme where the dentist was paid for each service rendered might be safeguarded: (1) by the fact that dentists were honourable men; (2) by the unpopularity of dental treatment; and (3) by the appointment of regional dental officers. Medical certificates were quite unnecessary (Q. 9949). "Medical men do not understand anything about dental conditions." Subject to the supervision by the Regional Dental Staff, the witnesses thought that the bills for treatment would have to be met in full, and that if there was not enough money to meet them the State ought to find the balance.

The Incorporated Dental Society.

(App. XXVIII. Q. 11202–11392.) This society, for whom evidence was given by Mr. W. F. Bower and Mr. Butterfield, contains about one-third of the 7000 "1921" dentists. The objections already urged by other witnesses to the present partial scheme and the varying standards of administration were reiterated. A great deal of the evidence was taken up with the objection felt to clinics as being "contrary to the psychology of the average insured person" and also bad professionally. The witnesses suggested inter alia that the dental benefit must be adequate and free of cost to the patient, and that there must be free choice of dentist. There was a sufficient number of dentists to give complete treatment and to overtake arrears.

The suggested cost was 1½*d.* per week per head of the insured population, and the dentists undertaking service would certainly object to any scaling-down of their bills.

ROYAL COMMISSION ON LUNACY AND MENTAL DISORDER.

FURTHER SITTINGS.

(Continued from p. 889.)

THE Commission held a further session on May 4th and 5th, Mr. H. P. Macmillan, K.C., the Chairman of the Commission, presiding.

EVIDENCE OF THE MEDICO-PSYCHOLOGICAL ASSOCIATION.

The two days were occupied by the evidence tendered by the Medico-Psychological Association of Great Britain and Ireland. That body was represented by Dr. R. H. Cole (chairman of the committee appointed in July, 1924, to prepare a précis of evidence), Sir Frederick Mott, F.R.S., Lieut.-Colonel E. Goodall, Lieut.-Colonel J. R. Lord, Dr. W. F. Menzies, Dr. R. Worth, and Dr. M. Abdy Collins.

The evidence set out that the Association was established in 1841, and its objects were to facilitate intercommunication on all matters concerning the care, treatment, and recovery of patients suffering from mental disorder, and the collaboration of research into and the elucidation of the causes of insanity and its prevention. It was now some 800 strong, and a large proportion of the members were medical superintendents or medical officers of mental institutions. Since 1892, 379 medical men had been awarded its certificate in psychological medicine, while 18,000 certificates in mental nursing had been granted by it.

In regard to the general aspect of the subject the committee state that the need for legislative action before certain progressive lines could be followed had militated against the real advance which those engaged in this work desired.

In 1911 a committee was appointed by the Association to inquire into the status of British psychiatry, and it reported grave defects under which the specialty in this country laboured. Two of the chief of these were (1) the absence of proper provision for the early treatment of incipient and undeveloped cases of mental disorder; (2) the paucity of facilities for the study of psychiatry and for research. This committee recommended the establishment of clinics for mental disorders in connexion with universities, medical schools, and general hospitals; also that, as a general principle, the admission to all mental institutions should be on a voluntary basis, and loss of civil rights should not be consequential thereto. A further recommendation was that incipient cases should be detainable for a limited period, such cases being notified to the Board of Control; and that admissions to mental institutions should have no relation to poor-law authorities. They also asked that the use of urgency or provisional orders should be widened.

It was the view of the Association that the vast majority of the community, patients included, was grateful for the protection given by the present Lunacy Acts, and that on the whole the safeguards they provided against abuses and illegal detention had proved satisfactory. These Acts had failed, however, to keep pace with medical progress, especially in regard to the treatment of initial and more curable stages.

The Association state that many medical practitioners, not having had means of learning the manifestations and treatment of early mental disorders, failed to recognise the seriousness of them and the need for efficient treatment. Many such patients belonging to the well-to-do classes, who were certifiable, were now in private houses and nursing homes without any order having been obtained for their reception, and no intimation of such admission had been given to the Board of Control. There should be opportunities for the competent authority to ascertain that these places were suitable for the purpose.

The evidence tendered by the Association included appendices by Sir Frederick Mott (on better provision for early treatment), by Lieut.-Colonel Goodall (on a cognate subject), and by Lieut.-Colonel Lord (on psychiatry in some European countries and in America).

The Association's Recommendations.

The recommendations of the Association number no less than 57. The following are some of the points:—

In the organisation of clinics, special provision should be made for children, and the clinics should be, where possible, annexed to a general hospital or housed in a special building. Their medical and nursing staffs should include those specially trained in psychiatric work. Local authorities should provide and maintain these clinics or avail themselves of voluntary organisations for the purpose. Inspection and approval of the buildings so used should devolve upon a central Government department. In the case of voluntary patients, a 72-hour notice in writing should be required if a patient wished to leave the institution. The central Government department should have power to approve homes which were supported, wholly or in part, by voluntary contributions, or which were privately owned, which could lawfully receive without certification more than one paying patient who was suffering from early mental disease. All matters of mental health should be centralised in the Board of Control, which the Association preferred should be known as the Board of Mental Health, and that it should have a larger staff. When appointments were made as Medical Commissioners of the Board of Mental Health, consideration should be paid not only to the candidate's experience in mental disorders, but also to status and experience in the medical profession as a whole. The management of all rate-supported institutions for the care and treatment of mental disorders should be vested in one statutory committee of mental health of a local authority; the county or borough rate should be utilised to support the maintenance of necessitous patients, as well as of the fabric of public mental institutions, the rate being supplemented by a Government grant. A further recommendation was that the words "lunacy" and "lunatics" should be replaced by "mental disorders" and "persons of unsound mind"; and "asylum" by "mental hospital"; also that two medical certificates should be required for rate-aided as well as for private patients. The committee considered that there was need of simplification of forms under the existing Lunacy Acts, and that leave of absence on trial or for health should be encouraged. They further thought that the automatic discharge of a patient by escape after 14 days was undesirable. The after-care of rate-aided patients should be considered, and the work of such bodies as the Mental After-Care Association should receive adequate pecuniary recognition by statutory committees. Patients alleged to be of unsound mind should not be removed to a workhouse infirmary before their reception at a mental hospital. Patients transferred from a mental hospital to a poor-law institution should be transferable back again without re-certification. Reports on mental cases in all Poor-law institutions should be notified to the Board of Mental Health, and better provision should be made for the care and treatment of senile cases in infirmaries approved by the Board of Mental Health. The committee's final recommendation was that the protection afforded to medical practitioners by Section 330 of the Lunacy Act, 1890, should be extended so as to stay proceedings at an earlier stage than at present, and that they should receive the same immunity as that granted to witnesses in a court of law.

Colonel Goodall, in his special appendix, says that the Lunacy Acts of England and Wales mainly concerned themselves with the segregation and care of the "lunatic," the protection of him and his property, and of the public, and a perusal of the Acts left the impression that merely an alien was being dealt with, not a sick man. He also says that, apart from the Maudsley Hospital, we in England and Wales had long been merely marking time in psychiatry.

The Chairman put a number of questions as to the work done by the Association in improving mental nursing, and the provisions of the new General Nursing Council. Dr. Collins said the Association proposed to continue to hold its examinations for nurses. Dr. Cole said it was felt by the members that an unnecessary amount of records were required to be kept. This was such a burden that it really interfered with the treatment of mental disorder. As to the safeguards of the present statutes, these, except in certain minor respects, could not be improved upon.

Voluntary Treatment.

With regard to treatment of the early stages of the disorder, Colonel Goodall said the Association had pressed for some time for a relaxation of the law in this direction. The mental clinic should be under the same administration as the general hospital. He did not think it was wise to have mental patients in general wards. He thought all kinds of early cases should be admissible to the clinic; here the treatment would be more intensive than in an ordinary asylum: there would be a larger proportion of staff, and the latter would be assisted by other medical men. He disliked the idea that these clinics would be corridors to the asylums.

The question of voluntary patients was discussed in a conversational way round the table, views being freely exchanged. Dr. Menzies drew attention to the class of case already certified and in a mental hospital who became physically ill and needed surgical or other special treatment, such as a general hospital was continually giving. These could be transferred to the general hospital clinic for a period.

Stigma.

Dr. Menzies expressed the view that the stigma which was generally held to attach to mental disease would be greatly diminished with the spread of education and enlightenment. A large part of the objection to being certified was found to consist in the fact that patients who had been discharged from a mental hospital were proved by experience to be unemployable, however well they might be deemed to have recovered. The statement was often made: "He may have a relapse at any time: he might have one now."

Sir Ernest Hiley suggested that if a man mentally ill were removed by the sanitary inspector he would probably be stigmatised, and Dr. Collins asked why the same person should not do this as acted in the cases of scarlet fever. Dr. Cole said many voluntary patients themselves told their friends that the place they had been to was really an asylum. Still, a man who went to an ordinary hospital would be regarded as less mentally ill than if he were to go to the Maudsley Hospital. Sir Ernest Hiley said that even a special ward for these cases in a general hospital was known as "The Balmy Ward," and Colonel Goodall retorted that that was no reason why people should be denied the benefits attaching to such a ward.

Classification.

Sir Frederick Mott said it was desirable to have, in association with mental hospitals, what was known as an "acute block" outside the mental hospital grounds so that patients here would not mix with chronic lunatics at all. Many mental hospitals were without this provision. These would be for the more curable cases and would be useful as clinics to which general practitioners could bring their patients. Dr. Cole said that, wherever possible, mental clinics should be in association with general hospitals. In answer to the Chairman, he said that rate-aided and the private patient should be assimilated in the matter of legal procedure. There should be no distinction simply because one had money. The two medical certificates recommended for each class of patient could be given after consultation, but there should be a separate examination of the patient by each of the medical signatories. Colonel Lord said it had been felt all along that the Poor-law officials were not the right people to have charge of the insane. The Association considered that the county council or the borough council should not only build and maintain mental hospitals, but that they should take over all the duties and responsibilities in connexion with those patients. That would be better for the patients, better for the administration, and would probably be, in the long run, more economical.

The Patient's Rights.

Dr. Menzies, in answer to a question by the Chairman, said that the justices acting in this work should be specially chosen—perhaps by their brother magistrates—by reason of their experience and interest in lunacy work. With regard to the right of a patient to see a magistrate, Dr. Cole said the exercise of this right was sometimes very upsetting to patients, especially as the form to be filled up was such an elaborate one. Dr. Menzies said the fundamental principle of all the Association's recommendations was to render the treatment of the patient as a sick man as easy as possible, and to make improper detention as difficult as possible.

Lord Russell asked in how many cases a second certificate would prevent a man being wrongfully detained, and Dr. Menzies replied that in ten years' time it was hoped that the permanent certificates would be reduced to a fourth of the present number.

Sir David Drummond asked whether the Association's view was that the second certificate should be given by an expert in these diseases, and Dr. Cole replied that it was felt that the right of supplying the second certificate should not be taken from medical men as a whole; but they felt that every medical man should have some proficiency in mental diseases.

The Central Authority.

Dr. Menzies was questioned upon a supplementary memorandum which he had supplied, chiefly on the question of the central authority. He said his view was that the paid Commissioners should consist of five medical men and two legal members. The medical members should be paid at least £2000 per annum, and years served under a local authority should be taken into account in determining the pension. At present questions were kept held up at the Board of Control two or three weeks. He also suggested that there should be district inspectors. The feeling of the Association was that the gentlemen so appointed should be high experts, men of the highest medical and scientific attainment. He mentioned the late Sir Clifford Allbutt as the type of man the Association had in mind.

Licensed Houses.

Dr. Cole said it was felt that when the Act of 1890 came into force, the stoppage of the extension of licensed houses due to it was a mistake. The general public wanted their relatives who were mentally ill to go to a place they themselves selected. A considerable proportion of people and doctors preferred the licensed house. When those houses were full there was a tendency to evade the Lunacy Act, to keep in houses patients who ought to be certified to the Board of Control but were not. The present distribution of licensed houses was very unequal. By interfering with private asylums one was interfering with private single patients and with private practice, considered as a whole.

Asked as to possible collusion in these houses, Dr. Cole said the only collusion he could think of was between a medical officer and a relative of a patient. He felt sure there was no risk of exploitation of patients.

Lord Russell suggested there might be a temptation to extend the time of detention of a patient beyond the needed period, but Dr. Cole said he did not think that was so; people did not pay more for the care of their relatives in these circumstances than they could help. Some preferred to remain on as voluntary boarders, and there seemed no good reason why they should not. Lord Russell explained that the real point was the suspicion of the public that on occasion interest might conflict with duty.

Female Nurses in Male Wards.

Colonel Goodall was questioned about his experiences in having male wards nursed by women. He said his individual view was favourable to this—the Association as a whole had not pronounced on the matter. Six of his wards were under female nurses, and in two of them there were no men at all. That had been the case in his mental hospital since 1920. In three war years he had great experience in the treatment of mental cases, some of them very severe, and these were under the care of trained female mental nurses, some men being, during the war, employed in a subordinate capacity. Women, he found, were able to exercise sufficient control over these male patients, except in the small matter of exercising in the gardens. From the therapeutic standpoint he was sure women were far superior to men for the work; there was a psychological and sex basis for this. This employment of women nurses in male wards had been attacked by the local trades-unions, on the moral ground, and that of the alleged unnecessary supplanting of the men. Both these objections were false, and he had not discharged a man so that a woman could be appointed.

Psychiatric Education and Research.

At the short sitting on Tuesday the chair was occupied during part of the time by Mr. Micklem, K.C.

Sir Frederick Mott spoke of the need for better provision for education and research in connexion with mental disorder. In 1907 he felt convinced that the diploma in psychological medicine would be of equal value to the D.P.H. Now, in L.C.C. mental hospitals the possession of this diploma was a sine qua non for a senior appointment. It was granted only to men who had been a year or two in asylums. There were at present only three holders of the London University doctorate in psychological medicine. He outlined a plan whereby, for purposes of research, several asylums would have a central laboratory, apart from the laboratory of each. Colonel Goodall said that at Cardiff large sums of money had already been spent on research. The present teaching on psychiatry was inadequate in this country, far worse than at Utrecht University, for instance. Sir Frederick Mott argued in favour of team-work which had brought about advances which no individual work could have done.

MEDICINE AND THE LAW.

SALE OF MILK "AS IT CAME FROM THE COW."

AN appeal was heard recently in the Divisional Court in which J. Bridges, an inspector under the Sale of Food and Drugs Act, appealed against a decision of the justices at Stow-on-the-Wold dismissing a summons that he had taken out against J. Griffin, a dairyman. The appellant had bought from a roundsman employed by the respondent a pint of milk, which on analysis had been found to be deficient to the extent of 16 per cent. in milk-fat. The milk had been drawn from a tap at the bottom of a churn. The respondent had given evidence of having instructed his man to stir the milk before drawing it off for a customer; but whether this had been done or not the magistrates had been satisfied that the milk was put into the churn in the state in which it came from the cow, and that no one had had access to the churn or had tampered with its contents. The question argued, therefore, was in substance whether an "abstraction" of cream, within the meaning of the Milk Regulations, 1901, takes place if milk has been drawn from the bottom of a churn, when some of the cream which should go to the customer has risen to the top. The summons was for selling milk not of the nature, substance, and quality demanded by the purchaser, not for actually abstracting the cream, the Milk Regulations, as was argued on behalf of the respondent, establishing no standard for what should constitute milk, but providing only that if it has failed to reach a certain standard adulteration by addition of water or abstraction of fat should be presumed. It was contended that where the analyst's certificate only was relied upon by the prosecution, proof that the milk was put in the churn as it left the cow and had not been tampered with was a good defence.

The Lord Chief Justice gave judgment allowing the appeal, in which Mr. Justice Avory and Mr. Justice Shearman concurred. Lord Hewart said that the case had resolved itself into a question whether there could be said to be abstraction of milk-fat where all that had happened was that the milk had been poured in bulk into a receptacle and, after the cream had risen, had been sold as new milk, when owing to the construction of the receptacle it had been drawn from the bottom. The regulations did not supply a definition of milk, but supplied a means of proof. The milk, however, to which the regulation referred was not the milk in bulk in the churn, but the actual sample sold to the customer. In *Hunt* v. *Richardson* [(1916) 2 K.B. 446] it had been found expressly that nothing had been subtracted or added, and the defence that the milk was "as it came from the cow" had been adopted ever since. The important moment was, however, the moment of sale, and the important milk was the milk that was sold. It was not enough to say that there was a time when it formed part of milk which was in its natural state. The milk as put in the churn was found by the magistrates to have been in its natural state. There was no finding that the sample sold was in that condition, and it was contended that the cream had risen to the top owing to the churn having been allowed to stand. In *Dyke* v. *Gower* [(1892) 1 Q.B. 220] cream had been abstracted from milk at the bottom of a receptacle because milk had been taken up from the top by means of a dipper; this was the reverse of what had happened in the case under discussion. His Lordship asked whether if a seller put milk into a receptacle knowing that the cream would rise to the top, and then sold from the bottom, he could say that milk so denuded of cream was as it came from the cow. In *Dyke* v. *Gower* the abstraction of cream had been ascribed to "neglect to keep the milk stirred." His Lordship referred to Scottish cases which appeared to harmonise with the reasoning in *Dyke* v. *Gower*. There was nothing in the case before the Court on which the magistrates could find that the milk was in the condition in which it came from the cow, and the right conclusion was that it was not of the nature, substance, and quality of that which was asked for. There was also evidence that the defendant knew what would happen if the milk was not stirred, but no evidence to show that to stir it would be impracticable. The appeal, therefore, ought to be allowed.

The successful appellant in this case is to be congratulated, as does the local authority for which he acted, upon having secured a decision which will be of great value to others having like responsibility for maintaining the quality of milk sold throughout the country. The importance of Lord Hewart's judgment lies in the attention which it calls to the essential question of the condition of the milk actually sold, and to its condition at the time of sale. This, of course, is what really concerns the customer and consumer. A housewife who buys milk deficient in cream can derive no consolation from the possible fact that it once formed part of a larger quantity of milk which was rich in cream, or from the fact that no deliberate or mechanical abstraction of cream from it has taken place. It is also clear that the decision inflicts no hardship on the great majority of honest milk-dealers, who only wish to supply good milk, and who know that they can put it in bottles and sell it in them as it came from the cow, or can see that their men keep it stirred with a plunger when on their rounds. The plunger, however, should be so fitted that it can be used without exposing the milk to any external contamination. Of this also milk-dealers are well aware.

BAKER'S ITCH AND WORKMEN'S COMPENSATION.

In a paper read before the Royal Society of Medicine, Section of Dermatology, in October, 1924,[1] on the subject of "baker's eczema," Dr. Prosser White and those who joined in the subsequent discussion showed that there is by no means unanimous medical opinion as to the causes of the symptoms complained of by workmen who seek compensation for this affection. Dr. White indeed suggested serious doubt as to whether the claimants of such compensation had a primary morbid condition of the skin, and whether there was in fact any rash peculiar to those who prepare bread and confectionery for human consumption. In an interesting compensation case heard recently at Hanley, and briefly reported in our last issue, his honour Judge Ruegg had before him a workman fully recovered, who had suffered from the complaint and anticipated its recurrence if he returned to his work. The judge held that to compensate a man for that from which he was not suffering would be to compensate him for life, and that if the man returned to baking and developed the disease again he could claim compensation as for a fresh accident. It was intimated, however, that there would be an appeal, which will be awaited with interest by bakers and confectioners. In view of the opinions expressed at the meeting of the Royal Society of Medicine it would be interesting from a medical point of view to know whether on such occasions as the above the evidence proves that the workman's illness is directly and exclusively due to his occupation. If there is a predisposition to eczema it would hardly seem fair that a man should be compensated permanently, merely because he has developed it through engaging in work likely to have that effect, and another form of livelihood would seem to be indicated. If, on the other hand, the making of bread and confectionery tends to cause eczema in previously healthy workmen in England, the desirability of devising and enforcing suitable precautions is immediately suggested. Dr. White said that baker's eczema is unknown in France, and that American statistics point to a similar immunity being enjoyed by workers in the United States.

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[1] THE LANCET, Oct. 25th, 1924, p. 859.

Public Health Services.

SCHOOL MEDICAL SERVICE.

YEAR by year increasing space is being given in the general press of the country to reports by school medical officers, some of whom give very full accounts of the work being done and the remedial measures adopted. There is evidence in the reports for 1924, now before us, of a practical desire to interest the layman as much as the statistician.

Name of district.	No. on roll.	Av. elem. school attendance.	No. examined in "code" groups.	Special examinations or inspections.	Percentage of children found on routine examination requiring treatment.†
Ilford ..	10,693	—*	4,007	10,719	40·2
Gillingham	7,540	6,880	2,761	1,690	14·0
Eccles ..	—*	—*	2,315	5,733	22·7

—* = Not given.
† Excluding cleanliness and dental defects.

Ilford.

Dr. A. H. G. Burton, in his report to the urban district council, points out the steady decline of cases of scabies from 146 in 1920 to 5 cases in 1924, and of impetigo from 586 to 256 in the same period, and the small figure of 5·6 per cent. of verminous heads reflects favourably on the interest his public are taking in hygiene generally. The steady rise in the percentage of parents attending the medical examinations to 71 per cent. is encouraging. 13·8 per cent. of the children examined were found to be suffering from unhealthy conditions of the nose and throat, and as 302 children who had either suffered and are suffering from discharging ears or defective hearing are known in the district Dr. Burton suggests that an aural surgeon ought to be appointed. Of 62 per cent. of children requiring dental treatment 62 per cent. accepted it; 13·5 per cent. children required treatment for visual defects, and all who were recommended glasses obtained them.

There was a distinct drop in all the infectious diseases except measles during the year. Dr. Burton hopes that an open-air school may be opened this year to accommodate the 177 pre-tuberculous children in the district. In Ilford no school meals are provided and no special schools exist for physically or mentally defective children. The point is raised of the two definitions of feeble-minded, and Dr. Burton contends that the "social" definition now applied to those over 16 years should be made to apply to all ages, and some other class of certificate provided for children who require special education. This would cause no stigma to the child, and such children could be educated with dull and backward children, and if suitable be transferred later to an elementary school. Such a course would entail institutional care for children certified under the Mental Deficiency Act at prohibitive cost, to say nothing of the parents' objection to having their children removed. As it is now most certifying officers hesitate to certify any child who might ultimately be returned to an elementary school, and statistics show how few of the children once certified ever do return. Dr. Burton, in explaining the paucity of certified children in his area, states that he has avoided notifying as mental defective children who are merely mentally retarded.

In the return of goitre cases 13·8 per cent. had slight enlargement, 2·4 per cent. marked enlargement, and 0·6 per cent. such enlargement as to suggest that treatment may be required. The school nurses carried out 35,450 examinations during the year. From the table of average heights and weights of Ilford boys and girls, which is shown in comparison with the anthropometric standard, it appears that 8–9 year old Ilford boys are 2·78 inches taller and 1·37 lb. lighter than those in the standard.

Gillingham.

From the above statistical table it will be seen that the standard of defect for which treatment is recommended is distinctly low in Gillingham. Dr. W. A. Muir, in his report to the Education Committee of the borough, points out the complete coördination now existing between the various health services, so that the records of ailing children are available from all sources. The hygiene of the non-provided schools in his area is generally below requirements. At routine examinations 7 per cent. of the children were verminous, and at the nurses' surprise visits 13·4 per cent. of the average attendance were verminous. A table showing the percentage of unclean children in each school by introducing a competitive standard should have useful results in the future. The decrease in the incidence of ringworm and impetigo is commented on, but no comparable figures are given for past years. Defects of the nose and throat were found in only 6·3 per cent. of "routine" children, and of those requiring treatment for tonsils and adenoids 55·6 per cent. obtained it, the cost to the authority being £1 4*s.* 6*d.* for the operation. Treatment for defective hearing and disease of the middle-ear was required in 0·94 per cent. of Code group children.

As the dental clinic is open on only three half-days per week only the worst cases of dental caries could be referred for treatment—i.e., 19·6 per cent. of the intermediate and "leaver" groups and 21·6 per cent. of the 5 to 8 year-olds. This condition of affairs is scarcely one on which the local education authority can congratulate itself. The local dentist is an optimist. He writes: ". . . . I am sure I can get 2*s.* for gas extractions for two reasons. Firstly, because most patients are very surprised at the cheapness of the present 1*s.* charge, and sometimes give me an extra amount out of gratitude. . . . When a town-hall is built I trust a proper room may be procured for me, with a recovery room away from the waiting room and the operating room in a north light." 0·28 per cent. of the routine children had pulmonary tuberculosis and 0·79 per cent. were classed as suspicious. No open-air class or school exists for the treatment of these cases. 12,027 school meals were supplied to 230 necessitous children. A plea is put up by Dr. Muir for the local education authority to make some arrangement with St. Bartholomew's Hospital, Rochester, whereby all crippling defects and orthopædic cases would have early and efficient treatment.

No special schools exist in the borough for the education of physically defective and mentally defective children. 1·9 per cent. of the intermediates and "leavers" were found to have visible enlargement of the thyroid gland. Measles, with 366 cases in 1924, as against 97 cases in 1920, was the only infectious disease showing an increase during the year.

Eccles.

Dr. J. E. Spence's report is a record of much work carried on by him unassisted except by a part-time dentist and a part-time ophthalmic surgeon. 8018 inspections is an imposing total for one man who also carries out the treatment in the minor ailment clinic, gives gas for the dentist, and supervises an open-air school, in addition to his work as M.O.H. The division of the work of the four nurses between school services and the public health side enables them to supervise infectious diseases, except scarlet fever and diphtheria, and since they also act as home nurses the confidence and sympathy of the parents are enlisted with beneficial results in the treatment of the school child. The welfare scheme is now coordinated with the school service and ensures continuity of supervision of children from infancy until they leave school, and the correction of remedial defects in infancy should result in a fall in the number of defects found amongst school entrants.

Stress is laid on the connexion between over-clothing (amongst other factors) and catarrhal conditions leading up to much invaliding from otitis and respiratory affections generally. Amongst the code groups 14·5 per cent. suffered from enlarged tonsils and adenoids, 11·1 per cent. from other nasal defects, and 15·7 per cent. from bronchial trouble; 71 children were found to have defects of the ears, and many children with defective hearing were found to have thickened and indrawn drums as sequelæ of old-standing catarrhal conditions. Though the number of verminous children has fallen this year, the number of those unclean had risen, and a slight increase in cases of blepharitis and conjunctivitis is reported. The school dentist examined 3752 children, of whom 2055 required treatment and 1186 were treated; 140 minor eye defects were treated at the clinic, and 182 were referred for refraction; glasses were prescribed in 123 cases, and obtained by 102 children. Six cases of organic heart disease and 130 cases of functional cardiac disturbance were noted. In view of the widespread interest now taken in rheumatism in its damaging effects on the heart, the past history of all cases of acquired organic carditis would be helpful.

The work of the open-air school is reviewed. The average gain in weight per child was 0·8 lb. per month. The cost per child to parents who can afford it is 5*s.* per week, and parents paid £283 3*s.* towards an outlay of £372 17*s.* for meals, medicine, car fares, &c. A table showing the length of stay, gains in weight, and general condition of each child in the open-air school is given. Apart from the open-air school 31 children who were ailing or convalescent were sent into the country under the auspices of the Manchester and Salford Children's Aid Association. No special schools as yet exist in Eccles for the education of physically or mentally defective children.

PORT SANITARY AUTHORITIES.

IN the letter introductory to his annual report for 1924 to the *Cardiff Port Sanitary Authority*, Dr. R. M. F. Picken, the medical officer of health, observes that, although no case of plague has occurred in Cardiff for many years, the chance of the spread of the disease has been a constant cause of anxiety. This was much accentuated in 1924 when a ship, which lay for a while in harbour during the summer, and was on arrival reported free from rats and "all well," and was later examined and "no rats found," was again inspected shortly before leaving and given a clean bill of health, and yet two cases of plague developed on board a fortnight later, the ship not having meanwhile touched at any other port. At Suez she was fumigated and ten rats killed. As a consequence ships are now inspected for rat infestation even more carefully than before. Dr. Picken saw two ships fumigated with hydrocyanic acid to destroy rats and thinks the method employed to be, in the hands of experts, without danger and the most efficient and expeditious means of freeing a ship from rats and all vermin. One small-pox patient, though discharged after treatment from a hospital abroad, was found on arrival at Cardiff to be still infectious; five of the crew were vaccinated and no subsequent cases occurred. The question of providing latrines ashore in sufficient numbers to permit the sealing of the water-closets of all ships in dock is under consideration. This very important matter came to the front in 1924 owing to the visits of naval vessels with large crews. In the report itself we find that the infectious diseases that came most frequently under notice were malaria 25 cases, pneumonia 11, and tuberculosis 5, or perhaps 17. There were no cases of cholera, plague, or yellow fever, and the hospital at Flat Holm Island, kept always ready for them, has been unused throughout the year. Many rats have been killed: in ships, by baits, 1480 (all black), averaging 39 per ship; by sulphurous acid 66, 9 per ship, and by hydrocyanic acid 44, 22 per ship; 1119 rats and 1097 mice were killed about the port by baits, and 437 in warehouses. Dead rats (104) were examined but none were plague-infected. On 214 rats examined for fleas, *Xenopsylla cheopis* was most frequently found, but never on rats from outside the port sanitary area; *C. fasciatus* was found on a rat caught in the town, and *X. brasiliensis* was found, for the first time in Europe, on a rat killed on board a ship from Brazil. The fleas were identified by Mr. J. J. Simpson, keeper of zoology, National Museum of Wales. The number of venereal cases attending the seamen's clinic for the first time (815) decreased in 1924 by a quarter, but the total attendances (16,212) increased by a sixth. Fifty of these cases were recommended for hospital treatment. Of scabies 26 cases were treated among seamen; no men were found verminous. None of the 351 aliens who passed through the port suffered from infectious disease. The lighters of the port have been examined, cleansed, and disinfected; the fishing boats and wharves have been regularly visited, cleansed, and disinfected. Inspections were made of 7086 vessels with 126,057 men in their crews. There were disinfected 887 articles of clothing and 1861 beds were destroyed. In 609 ships 1532 structural defects and other nuisances were detected, dirty quarters in 627, defective side lights in 298, 111 forecastles were verminous, 83 water-closets were dirty, 78 stoves in crew spaces were defective, in 50 cases water-closets or paint stores ventilated into crew spaces, and in another 50 the drainage of crew spaces was defective. Nearly all of these and the other 235 defects were put right, and the note in the report is correct that these figures prove useful work done by the staff of the authority and imply a great improvement in the sanitary surroundings of the seamen whose ships reach Cardiff. Ventilation and lighting are being improved, and dirt, smell, and dampness are being diminished. Defects were noted in less than 10 per cent. of the ships. Of 206 samples of drinking water from ships examined, 49 were condemned; the tanks concerned were emptied and cleansed. Some 350 tons of imported food, chiefly fruit, were condemned and destroyed. The sanitary condition of the canal boats is reported as on the whole satisfactory.

In his annual report for 1924 to the *Tyne Port Sanitary Authority*, Dr. W. E. Harker, medical officer of health, states that 82 vessels were visited by him on account of reported or suspected sickness on board; five cases of typhoid fever, one of diphtheria, and various slighter cases were removed and necessary disinfection done. No infectious disease was found among the 13,462 alien passengers, who were mostly clean. No case of plague, cholera, or yellow fever came under notice in 1924, but 5192 rats, none of them plague infected, were caught; 197 were killed with sulphur dioxide in 15 ships; hydrocyanic acid was not used. The dead rats were burnt in the ships' furnaces. Of the rats, two-thirds were black, one-third were brown; the largest number of rats caught in any month was 961 in October. Thirty-one ships from ports known or suspected to be infected with cholera had their drinking-water tanks emptied and purified. The chief diseases reported during the previous voyages or found on arrival were, accidents 197, venereal disease 122, feverish colds 114, undefined 96, malaria and influenza each 41, 10 cases of consumption. and 13 of typhoid fever with 5 deaths. The main imports into Newcastle were wheat, sugar, and other foods, of which there were condemned 1220 lb. peas, 10,808 lb. plums, 140 lb. potatoes, and three bags of wheat. The fish landed was good, but 35 of 8326 fishing vessels had to be cleansed and deodorised. In 10,076 inspections of ships, sanitary defects were found more often in foreign-going (13 per cent.) than in coasting (3 per cent.) ships. Peaks, forecastles, w.c.'s, and bilges of 1168 vessels, British and foreign equally, were found dirty and were cleaned. 1201 old beds were burnt. Structural defects were notified and rectified; side ports for refit 461, deck leaking 153, defective w.c.'s 135, defective stoves 36, water tanks cleansed 31, deficient ventilation 12, deck of forecastle for repair 7, paint (store) to be removed from bow locker 6, defects of drainage 6, of bulkhead 4, of lighting 1, and 1 iron deck was sheathed with wood. The 18 water boats of the port were examined and their tanks found in good condition. No master was summoned for evolution of dense smoke. The floating hospital is used for isolation and treatment of the more dangerous infectious diseases from abroad, also as a cleansing, disinfecting, and disinfesting station. Other infectious cases are sent to the city infectious hospital. The usual measures are taken for relief of venereal cases; there is no estimate of their usefulness.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED MAY 2ND, 1925.

Notifications.—The following cases of infectious disease were notified during the week, namely:—Small-pox, 176; scarlet fever, 1564; diphtheria, 769; enteric fever, 40; pneumonia, 970; puerperal fever, 45; cerebro-spinal fever, 10; acute poliomyelitis, 3; encephalitis lethargica, 55; continued fever, 1; dysentery, 7; ophthalmia neonatorum, 110. There were no cases of cholera, plague, or typhus fever notified during the week. The number of small-pox cases showed an increase of 6 over the number for the preceding week. Fifty cases were notified from Derbyshire (Derby C.B., 38); 11 from Northamptonshire (Kettering, 7; Desborough, 4); 38 from Northumberland (Prudhoe, 19); and 49 from Yorks, North Riding (Middlesbrough C.B., 45).

Deaths.—In the aggregate of great towns, including London, there was 1 death from enteric fever, 103 from measles, 11 from scarlet fever, 93 from whooping-cough, 25 from diphtheria, and 100 from influenza, as compared with 139, 162, 221, and 242 in the four preceding weeks. In London itself the deaths from influenza numbered 15, from whooping-cough 23, and from diphtheria 6.

Small-pox in Derby.—The medical officer of health of Derby reported to the town council on May 6th that the cases now numbered 147, compared with 102 last month. Since the outbreak in Derby in 1924, the great majority of the cases, he said, had been of the mild type. Recently there had been a larger proportion of a more severe type. The expenditure incurred during the financial year ended March 31st, 1925, was £5600.

Obituary.

THE LATE DR. REGINALD DUDFIELD.

Dr. Major Greenwood writes: "Absence from England when the lamentable news of Dr. Dudfield's death was received prevented me from adding a few words from the statistical side to your account of his career.[1] Dr. Dudfield was an important, in some respects the most important, member of the tiny group of English medical statisticians. He was the only senior member of the municipal public health service to whom statistical science was a principal interest. Others—it would be invidious to mention names—have, of course, done valuable statistical work, but Dudfield alone for more than a quarter of a century took a regular part in the work of the Royal Statistical Society, contributing many valuable papers to its journal and never grudging time and energy for the heavy work which has to be performed by the council and committees of a large scientific society. I have said that Dudfield was in some respects the most important member of our group. The reason is this. He was particularly interested in aspects of statistical work which *must* be studied if we are to progress, but which are not very attractive to most investigators. He was, indeed, a good investigator, as his paper on Epidemic Diarrhœa (read before the Epidemiological Section of the Royal Society of Medicine in 1912) proved; but his greatest energy and enthusiasm were reserved for the, as many think, dull work of reforming the basis of statistical investigation, rendering the data more precise. Most medical statisticians will recall his labours on the statistics of stillbirths, and if in this and in other countries more precise information on that topic is made available in the near future, Dudfield is the man to whom the reform will mainly be due. Within a few weeks of his death he attended at Geneva an international committee appointed by the Section of Hygiene of the League of Nations where this subject was discussed, and I have reason to believe that his share in the work of the committee was very large. 'I know the map of England, as well as the noble lord, or as any other person; and I know that the way I take is not the road to preferment.' Dudfield might have said that with as much justification as Burke. Patient and sagacious labouring to improve the raw material of statistics leads neither to academic honours nor to official promotion. But when, if ever, a true history of scientific progress is written, the name of Reginald Dudfield will be given precedence of names more often upon our lips. At least his old friends and colleagues in the work of the Royal Statistical Society and the Epidemiological Section of the Royal Society of Medicine realise how great a loss they have sustained."

HENRY TRENTHAM MAW, M.D. CAMB.

Dr. Henry Maw, chairman of directors of the firm of S. Maw and Sons, Ltd., manufacturers of surgical instruments and appliances, died on April 23rd at the age of 58. Dr. Maw was educated at Repton and Christ's College, Cambridge, and studied medicine at St. Bartholomew's Hospital, which he entered in 1890. He took the diplomas of L.R.C.P. Lond. and M.R.C.S. Eng. in 1892, and graduated M.B., B.C. Camb. two years later, gaining the M.D. in 1896. He held hospital appointments as house surgeon at the Leeds Infirmary and in London at the Children's Hospital in Great Ormond-street, and was for a time medical officer at the Royal Chest Hospital, City-road. Upon joining the firm, which was established by George Maw in 1807, Dr. Henry Maw took over the managership of the surgical instrument department, and continued to occupy that position until his death. He became a partner in the firm in 1901 and acted as chairman of the company from 1918. He was honorary treasurer of the National Union of Manufacturers and was also an official of the Surgical Instrument Manufacturers Association. Dr. Maw took infinite pains in all he did, and it was this quality associated with the will to please that assured his success in various walks of life.

DONATIONS AND BEQUESTS.—Miss Jane Ada Trenow, Richmond, Surrey, besides other bequests, left £1000 to the Zenana Bible and Medical Mission, and £500 to the Mission to Lepers in India and the East.—Miss Isabella Seymour, of South Eaton-place, London, S.W., and Aix-les-Bains, bequeathed £6000 to charities, including £2000 to St. George's Hospital, London; £1000 to the Belgrave Hospital for Children, Clapham-road, London, S.W.; and £1000 each to the Hôpital Etablissement des Baines (Roman Catholic), the Asile (Protestant), and Hospice Brachet, all at Aix-les-Bains.—The Christie Hospital, Manchester, has received £2500 from the executors of the late Mr. Edwin Kershaw, of Bolton, as payment on account of the residuary estate (amounting to about £4000) which Mr. Kershaw bequeathed to the hospital.—The students of Aberdeen University have raised fully £1000 on behalf of the hospitals in Aberdeen.—Miss Eliza Entwistle, of Longsight, Manchester, left £1000 each to the Manchester Children's Hospital, Ancoats Hospital, and the Christie Cancer Pavilion; £500 to the Ardwick and Ancoats District Nursing Home; £100 each to the Manchester Surgical Aid Society and the Disabled Folks Guild, Ancoats; and £350 to the Manchester and Salford Blind Society, subject to a life interest. The residue of the property to be divided between the Manchester Royal Infirmary, St. Mary's Hospitals, Manchester, and any other charitable institutions the executors may select.—The St. Mary's Hospitals, Manchester, have received £1500 from the executors of the late Mr. James Parr.

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[1] THE LANCET, April 25th, p. 898.

Correspondence.

"Audi alteram partem."

THE ALLEVIATION OF CHRONIC PROGRESSIVE DEAFNESS.

To the Editor of THE LANCET.

SIR,—The interesting and instructive paper on the above subject published in your last issue by Mr. George C. Cathcart, calls for the serious attention of all otologists considering the almost invariably unfavourable result from treatment in cases of chronic progressive deafness whether due to pathological states of the auditory nerve or to chronic adhesive changes in the middle ear.

Modern surgery, with all its brilliant achievements, has up to now been unable to design any operative procedure which has afforded anything but a merely temporary improvement in those cases where definite thickening of the mucosa has taken place or where advanced adhesive changes have been noted clinically. One can understand that in cases of nerve deafness, where there is frequently a functional as well as an organic element, a certain improvement is possible by re-education with sonorous vibrations, but my difficulty is in grasping how advanced pathological thickening of the tympanic mucosa and stapedio-vestibular adhesions in cases of chronic dry catarrhal otitis media and pathological changes in the bony elements of the pars petrosa of a "porous" nature, as in otosclerosis, are capable of being materially altered by sound-vibration treatment even if a hyperæmia is induced as the result of mechanical sound waves of varying pitch and intensity.

The fact that 81 per cent. of Mr. Cathcart's nerve cases improved, whereas the improvement in the cases of chronic otitis media and otosclerosis was respectively 67 and 55 per cent., shows that the former are more prone to respond to this method of treatment than either of the other types of deafness. Is this due to the effect of the treatment or the frequently existing functional element?

I venture to suggest that Mr. Cathcart should continue his investigations and should experiment on certain deaf animals—e.g., dogs or cats—and after a course of treatment have a careful histological examination of the middle and internal ears made. If only it were possible to have the treatment based on sound pathological observations its reception by otologists would be more enthusiastic than it is at present. At the same time, I desire to say that the results presented by such a careful and conscientious observer as Mr. Cathcart is should not be too lightly dismissed even if at the present time pathological evidence of what actually does take place is not forthcoming. Otology has all along suffered from lack of pathological investigation, partly on account of the difficulty of securing good sections of the temporal bone, and more especially from the fact that patients do not die from such diseases as chronic catarrhal otitis media and otosclerosis.

Mr. Cathcart deserves great credit for his endeavours to do something to alleviate the hard and depressing lot of those whose hearing is so poor as to debar them from social intercourse.

I am, Sir, yours faithfully,

Manchester, May 10th, 1925. WILLIAM MILLIGAN.

CANCER AND INNERVATION.

To the Editor of THE LANCET.

SIR,—At the conclusion of a leading article on the Anatomical Distribution of Occupational Cancers allusion is made to Dr. W. Cramer's experimental support of my clinical observations on the relation of innervation to cancer. What can be the meaning of it all? Can it be that the presence of rodent ulcer acts as a stimulus that induces a dilatation of blood-vessels, which *encourages its growth within the affected area?* This does not appear to me to be the whole explanation, for many reasons that would take too long a letter to describe. The answer is complicated by *realising that that which influences the spread* need not necessarily affect the genesis of a rodent ulcer, although both its incidence and spread appear, *from my clinical observation*, to be very closely connected with the nervous system. *It may* suffice here to indicate that during one type of the natural acquirement of grey hair the greyness begins in beards on four points—viz., the two points where the mental nerves become cutaneous, and the two points where the great auricular nerves become cutaneous, thus making on the same beard four symmetrical points of beginning greyness, which cannot be a matter of accident or coincidence. As the greyness of the hair covering the skin and lower lip continues, an area exactly corresponding to the mental nerve area, as mapped out by Dr. Henry Head, is delimited by greyness. This appears to me a most interesting and profoundly important observation. It demonstrates a distinct relationship between an epithelial change (though it may be only one of loss of pigment), which *is under an influence* of the nervous system. Hair follicles, although near neighbours to each other, are really separate establishments, yet each is involved in this process of greyness within the nerve area under *demonstration*. Hence a nerve *influence*, or modification of nerve influence, upon the incidence and genesis of pathological new growth appears to me a very much more subtle thing than can be explained by *only an alteration in the local blood vascular system*.

There may be two distinct nervous influences in operation—one that concerns the incidence and genesis of rodent ulcer, and the other that affects only its spread. Now that Dr. Cramer's ingenious experiments have called attention again to the matter, I hope it will receive the attention I believe it deserves. I should like to remind you that I have shown clinical evidence that demonstrates a relationship between infective processes and nerve areas. Hence the question of acquired and natural immunity is also concerned *in a local* nervous relationship between host and the infective process.

I am, Sir, yours faithfully,

G. LENTHAL CHEATLE.

Harley-street, W., May 8th, 1925.

THE TREATMENT OF EXCESSIVE LOSS AT THE PERIODS.

To the Editor of THE LANCET.

SIR,—If to condemn utterly is better than to damn with faint praise, then the advocates of X ray treatment may be grateful to Mr. Victor Bonney for small mercies. In your issue of May 2nd, referring to cases of excessive bleeding in which no myomata are present, he says:—

> "X ray treatment is as much to be condemned in these cases as it is in cases of fibroids, under which heading I will refer to it more particularly."

After keeping the trembling radiologist in suspense for a whole week, he proceeds (THE LANCET, *May 9th*, p. 990) as follows:—

> "The treatment of fibroids by X rays I heartily condemn. *It is, in effect, a revival of the bad* operation of double oöphorectomy . . . in quite a number of cases neither the bleeding nor the growth of the tumour was checked (by this operation). X rays effect a bloodless oöphorectomy followed by results exactly the same and exactly as variable. . . . *Moreover, I have seen irradiations* followed by acute septic degeneration of the tumour, and by severe X ray burning of the abdominal wall. . . . The ideal surgical procedure cures without *disturbing* either function or normal structure."

Here, indeed, is strong doctrine—no subtleties—all plain black and white. How simple it would be if I could say ex cathedra that Mr. Bonney's *black is white* and his white black! But twenty-one years of practice, whether they have taught me much or little, have, least, convinced me that truth is many sided, and I cannot oppose dogma to dogma. Nevertheless, I venture to assert (1) that any operation has a certain mortality; (2) that post-operative shock in a nervous patient is often severe and lasting; (3) that in some cases the excessive bleeding continues after the removal of the fibroids; and (4) that there are great numbers of cases on record in which a permanently satisfactory result has followed the treatment of fibromata by X rays.

It remains true that surgical removal is the treatment of election in women under 40, because, unless one produces an artificial menopause, it is impossible by X rays to reduce fibroids to permanent inactivity. After 40, X rays may be seriously considered as an alternative to surgery. *Pace* Mr. Bonney these effects are not simply those of a surgical oöphorectomy. The rays have an action on the tumours as such—temporary if the ovaries remain intact, but usually permanent if the ovarian activity is brought to an end. The power of X rays to cause *local* disappearances even of malignant tumours is not disputed, and it is surely not surprising that they can cause shrinkage of an innocent growth such as a fibroid. As to any disturbance which may follow an artificial menopause, the work of Groedel, Werner, and Borak [1] has taught us how to deal with these by checking the unbalanced action of the pituitary or the thyroid, on which they appear to depend.

The radiologist freely admits that, even in women over 40, there are many cases of fibromata which are unsuitable for X ray treatment. Large tumours should not be so dealt with as a rule, and the presence of sepsis or degeneration are contra-indications. In seeking to exclude these conditions he would be glad to have the aid of the gynæcologist—but is it in human nature that he should seek the coöperation of one who would like, metaphorically speaking, to burn him and his writings at the stake?

Mr. Bonney's reference to skin damage by X rays after sterilisation cannot be accepted in these days as a valid objection, provided that the treatment is carried out by a competent radiologist. Up to three or four years ago it was necessary to give a "full skin dose"—i.e., a dose just short of that producing a definite erythema—in order to get a sufficiency of radiations into the ovaries. Now, with improved apparatus and technique, only one-third of this is essential on any given area, which leaves a margin of safety of over 60 per cent. The X ray treatment of fibroids is admittedly of limited applicability. I will not venture to express an opinion as to what proportion of all cases are suitable. It is, indeed, impossible for any radiologist to obtain the data upon which an estimate could be based. It is equally impossible for the gynæcologist to judge of the successes of X ray treatment; he sees only the failures, just as the surgeon does in the case of Graves's disease. On the other hand, to the radiologist come some of the patients whom myomectomy has failed to relieve from the excessive losses on account of which they originally sought advice. To attempt to judge the value of the operation of myomectomy from a consideration of such cases would be manifestly unfair.

I now pass from this debatable ground to the use of X rays in cases of excessive bleeding where no tumours can be found. Such lesions as retroversion of the uterus or erosion of the cervix may be present, but operation should not be recommended for these conditions with a promise that the hæmorrhage will be benefited, as often it is not. Excessive menstrual bleeding often occurs in virgins, and may be accompanied by no detectable abnormality. It may then be termed "idiopathic" and appears to be associated with excessive production, or vitiation, of the ovarian hormone; it is amenable to the same type of radiation treatment as is so often successful in exophthalmic goitre. X rays in small repeated doses have the power of regulating thyroid secretions without in any way damaging the gland. It is never justifiable to push X ray treatment of the thyroid to the point of injuring it; and the same holds good with regard to the ovaries in the treatment of menstrual disorders in young women. I will now, in my turn, be mildly dogmatic, and say that X rays, properly applied, have an almost specific effect upon "idiopathic" excess at the monthly periods. They may also, in some cases, relieve painful menstruation when bleeding is not a prominent feature; but their sphere par excellence is in dealing with hæmorrhage. This is not the place to quote cases, but anyone interested may refer to my paper on the subject in The Lancet (1919, ii., p. 432).

The crude idea of destruction—even selective destruction—is quite out of date in radiation therapy. That of *regulation* is taking its place, especially with regard to the functions of the ductless glands. We know that we can by X rays check excessive activity of the thyroid, ovaries, or pituitary. We can stimulate the thyroid by electricity, and there is some ground for believing that adrenal secretion is increased by ultra-violet rays. The X ray treatment of endocrine disorders—under which heading must be included many forms of menstrual disturbance—is not in any sense bloodless surgery, but a rapidly progressing branch of physiological therapeutics.

I am, Sir, yours faithfully,

F. Hernaman-Johnson.

Harley-street, W., May 9th, 1925.

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[1] Brit. Jour. Radiol., August, 1924, p. 293.

TREATMENT OF ACUTE PERITONITIS.

To the Editor of The Lancet.

Sir,—In the excellent article on this subject printed in your issue of April 4th the principal traits of the diagnosis of the disease are touched upon. I shall take the liberty to make some additions to the diagnostical procedures proposed by Mr. Jeans and mentioned also by Mr. Zachary Cope.[1] Both of them advise in cases of difficult and doubtful diagnosis the making of a short exploratory incision of the abdominal wall. I am also of this opinion, but since the exact microscopic analysis of any peritoneal fluid is of great importance, I make only a very small incision in the abdominal wall, not only in order to see and smell the escaping liquid, but also to withdraw some of the fluid by means of a pipette introduced into the cavity and to subject it to microscopical examination. In my experience the cells in the normal peritoneal fluid are 70 per cent. lymphocytes. In cases even of early peritonitis the ratio of lymphocytes to other forms of cell becomes much smaller. Besides this, in cases of peritonitis caused by small perforations the contents of the organ perforated may be found. In very early cases, where there may be very little fluid, it is useful very gently to scrape the peritoneal contents of the parietal peritoneal wall with a spoon. This practice is adopted by me only in difficult and early cases and has proved to be a very useful guide. In a paper read before the Congress of Surgeons of South Russia in Odessa in 1924 I named this little operation *laparotomia minima*. It is performed under novocaine anæsthesia. The place of incision, in my opinion, is not of great importance, but it is better to cut in at the point of the supposed source of infection. The operation can be performed in bed. The length of incision required depends on the amount of subcutaneous fat, but need never exceed one inch. Simple puncture of the abdomen must be avoided, owing to the danger of perforating distended intestine.

I am, Sir, yours faithfully,

Serge Ligin,

Surgeon at the Labour Hospital, Nikolajeff,
South Russia.

April 27th, 1925.

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[1] The Lancet, 1924, ii., 806.

The Twelfth International Physiological Congress will take place in 1926, at Stockholm, from August 3rd to 6th. The Congress will be under the presidency of Prof. Johansson. Prof. Liljestrand will be hon. secretary and Prof. Santesson hon. treasurer.

HEALTH INSURANCE IN THE IRISH FREE STATE.

AN Interim Report of the Committee of Inquiry into Health Insurance and Medical Services in the Free State was issued last week. The Committee was constituted as follows: Prof. J. B. Magennis (chairman), Sir Joseph Glynn, Canon McHugh, Dr. W. J. Maguire, Dr. R. J. Rowlette, Dr. E. F. Stephenson, Mr. James Hurson, Mr. James G. Kydd, and Mr. J. J. McElligott, with Mr. W. J. Kavanagh (secretary). With the exception of the Chairman, Canon McHugh, and Dr. Rowlette, the Committee was composed of officials concerned with National Health Insurance or Local Government work.

Terms of Reference.

Appointed in May, 1924, the Committee was asked (1) to inquire into and report on the advisability of the continuance of the present system of National Health Insurance, and to make any recommendations which the Committee considers proper in that connexion; (2) to consider whether it is desirable to institute a system of medical treatment on a contributory basis, and, if so, to advise as to the form which such system should take; and (3) to examine and report on the question whether the medical services at present assisted or maintained out of State or local funds can be improved as respects efficiency and economy, and, if so, in what manner, due regard being had to any recommendations made under the preceding paragraph.

A large number of witnesses were examined, including representatives of the Government departments concerned, the approved societies, the Labour Party, the medical profession, and the local authorities. The Interim Report is concerned mainly with the first of the terms of reference, and deals only in general terms with the second and third. The Committee received an overwhelming body of evidence in favour of the continuance of National Health Insurance in the Free State.

High Cost of Administration.

Certain points in the present administration of health insurance received special study. The cost of central administration appears abnormally high, in that it costs 3*s.* 8¾*d.* per insured person in the Free State, as compared with 1*s.* 4*d.* in England. The Irish Commission submits that the method of calculating the expense at cost per head of the insured population is misleading and unfair; for it points out that there are over 12½ millions of insured persons in England compared to 450,000 in the Saorstát, and that the overhead charges must be greater proportionately to numbers in the Saorstát than in Great Britain for administering the same type of machine. There are, moreover, other reasons why the cost of central administration is relatively higher in the Saorstát than in Great Britain. Among others it appears that compliance in Great Britain, excluding domestic servants, is about 90 per cent. of the insured population. In the Saorstát the total, without exclusions, is only from 65 per cent. to 70 per cent. Non-compliance creates increased work for the Commission's staff. For the ten years ended March, 1921, the Irish Commission dealt with 15,200 disputed transfers. In the same period Great Britain, with an insured population 18 times that in Ireland, dealt with only 50,000 disputed transfers. From January, 1922, to Sept. 30th, 1924, in England with 12½ millions of insured people there were only 62 appeals. The Insurance Commission in the Saorstát with 450,000 insured persons dealt with 81 appeals. In Scotland with four times the Irish insured population there were only 44 appeals and in Wales no appeal until 1918. The Committee adopts the view that if there were proper compliance with the provisions of the Insurance Act the cost of central administration could be largely reduced. The main fact which emerges on this point is that the Insurance Organisation as set up in 1911 in Ireland is costly because it copies exactly that set up for Great Britain which, apart from its greater wealth, has a huge industrial population concentrated in convenient centres.

As regards compliance, the Committee believes that with the re-establishment of ordered conditions throughout the country compliance will become more general. The Committee recommends that greater powers should be given to the inspectorial staff of the Insurance Commission and that a publicity campaign should be organised to bring the benefits of the Acts before those for whom specially they were designed. Among some minor reforms the Committee recommends that the period during which notice of illness should be given by an insured person should be extended from three to seven days.

Approved Society Control.

The majority of the Committee recommends a very radical reform in the system of administration of health insurance—the amalgamation of all approved societies into one society. A strong case is made against the existing system, under which administration is in the hands of some 80 approved societies. It is said that there is overlapping of societies, inequality of benefits, lack of uniformity of administration, unnecessary expense both in the societies and in the office of the Commission. It is noted that the representatives of the approved societies (with the exception of the trade societies) were opposed to any radical alteration of the present system of administration by approved societies. The representatives of the Irish Labour Party and of the Trade Union Approved Societies, on the other hand, were in favour of a scheme of nationalisation, but failing that nationalisation, were willing to accept unification. Dr. Rowlette dissents from the majority of the Committee in regard to this recommendation, and in a separate note recommends that the whole system of insurance should be nationalised and committed to the care of a department of Government.

Advantages of Nationalisation.

Dr. Rowlette believes that such concentration in a Government department would have the following advantages: (1) The direct responsibility of a Minister to Parliament for the entire administration of National Health Insurance. (2) The coördination of National Health Insurance with the health policy of the country, and with the whole scheme of preventive medicine. (3) The possibility of readily fitting in National Health Insurance with any other form of social insurance which the country may decide to adopt in the future. (4) A greater immediate economy than can be attained, without loss of efficiency, by any other method. Even if there were to be only one approved society, he suggests, as the majority of the Committee recommends, there would still be considerable duplication of duties, as identical records on certain matters must be kept by the society and by the Commission or controlling authority. Such duplication would disappear if all administration were merged in one body. He further suggests that the creation of a society comprising in its membership all the insured persons in the Free State would not be free from danger. Such a society would be so large and so powerful that it would be beyond the control of either the official supervising authority or of the Oireachtas. It would be to the interest of such a combine to gain a power on each of the parties of the State, and to attempt to pervert Government at its source. So far from the diversity of elements in the society tending to prevent its exercising a political power, the fact that it contained very diverse elements would give it all the greater power in the underworld of politics. Moreover, the farming out of health insurance to a society created for the purpose would appear to be a mere shelving of the responsibility belonging to the State itself. In the words of one of the witnesses, "Unification would be nationalisation without responsibility."

Provision of Medical Benefit.

In reference to the second of the terms of reference, the Committee points to previous recommendations in favour of the provision of medical treatment for insured persons in Ireland, and it recommends, Mr. McElligott dissenting, that medical treatment on a contributory basis should form part of National Health Insurance. The Committee recognises, however, that the provision of medical benefit is mainly a problem of finance, and in the absence of fuller information as to the funds that may become available from insurance sources (in addition to those at present devoted from various sources to purposes of medical treatment), and as to the position which such arrangements would occupy in relation to the medical charities system, is unable in this interim report to formulate a scheme for the provision of medical treatment. It is hoped, however, that the valuation of the approved societies, the preliminary operations of which are at present proceeding, will be sufficiently advanced by the autumn of this year to enable definite recommendations to be made on the second—as well as on the third—of the terms of reference.

Present Medical Services.

In reference to the third of the terms of reference, the Committee reviews the present medical services of the country, and makes some sharp criticisms of the dispensary medical services. It admits that the present system of appointment is objectionable and sometimes corrupt, and that "the members of local authorities are not always competent to decide the merits of professional candidates." It is admitted, too, that many of the dispensary buildings are unsuitable. The increase of salaries, as shown by the average figures for the year ending March 31st, 1924, as compared with the figures for 1901—admitted to be grossly inadequate—is more apparent than real, owing to the greatly increased cost of living. The Committee recommends that provision should be made for "study leave" for dispensary medical officers.

A National Medical Service.

The report closes with a summary of the recommendations previously made in favour of a National Medical Service, and states that for a number of years there has been a growing volume of opinion in favour of such a service. Definite recommendations on this point are not made in the interim report, but the subcommittee is to consider the entire matter in the light both of past reports and of existing conditions and thus, it is hoped, enable the Committee to frame a comprehensive scheme which, under some form of national medical service, will combine the medical treatment of the insured with the medical treatment of the poor.

Mr. McElligott does not sign the general report, though he agrees with many of the recommendations. He dissents from every recommendation in favour of medical treatment until there is fuller knowledge from the financial side.

THE BATEMAN APPEAL.

As already explained in THE LANCET, it has been felt that material assistance ought to be offered to Dr. Bateman to meet the legal expenses of his recent successful appeal against conviction and to make good the deficiency in his professional income. Accordingly, the Bateman Fund has been opened and lists of contributions have appeared in recent issues. We have received additional contributions as follows:—

	£	s.	d.
Already received and acknowledged ..	136	13	6
Mr. W. C. Bull	5	0	0
Dr. A. G. Andrews	1	1	0
Dr. M. A. Collins	1	1	0
Dr. E. Fisher	1	1	0
Dr. Geoffrey Noott	1	1	0
Dr. A. Graham-Stewart	1	1	0

Remittances should be forwarded to the Manager of THE LANCET, 423, Strand, W.C. 2, and made payable to the "Bateman Fund Account."

LISTER INSTITUTE OF PREVENTIVE MEDICINE.

THE annual report of the governing body of the Lister Institute for the year 1924–25 includes brief summaries of work done in the six departments of the Institute under the general direction of Prof. C. J. Martin, F.R.S., and a brief note on the work of the National Collection of Type Cultures (Medical Research Council) which is housed in the Institute under the supervision of Prof. J. C. G. Ledingham, F.R.S.

We can only indicate a few of the important investigations which have been undertaken in the several departments.

In the department of *Bacteriology* Prof. Ledingham has continued his study of the virus of vaccinia and avian molluscum, and is investigating material from cases of the mild small-pox now prevailing in England. Dr. J. A. Arkwright has continued his work on bacterial variation and the bacteriophage phenomenon in association with Dr. S. S. Zilva. Dr. Arkwright has also studied the inflammatory reaction produced by irritants in guinea-pigs and in rats, with special reference to the influence of bad nutrition on the intensity of the reaction. In young growing animals the influence is obvious, and an attempt is being made to identify the dietary factors on which a large inflammatory reaction depends. Dr. S. P. Bedson has investigated the effect of splenectomy on experimental purpura in guinea-pigs. He concludes from his experiments that the spleen plays no essential rôle in the production of purpura, and suggests that splenectomy cannot be relied upon to give permanent relief in the treatment of purpura hæmorrhagica. Dr. H. L. Schütze has carried out a series of immunity tests in guinea-pigs with various plague prophylactics in view of the considerable demands on the Institute for plague vaccine for use abroad. A vaccine prepared by the Institute method, using agar flushed with serum, was tested against Haffkine's prophylactic on guinea-pigs and yielded a survival percentage of 44 per cent., Haffkine's prophylactic yielding only a 14 per cent. survival rate. The dose of *B. pestis* administered to the immunised guinea-pigs was that which killed 100 per cent. of control animals.

In the department of *Biochemistry*, under the direction of Prof. A. Harden, F.R.S., experiments bearing on the conditions under which the enzyme in living yeast and in yeast preparations exists are being undertaken. The conditions under which fat and carbohydrate are synthestised by vegetable organisms are being studied by Dr. Smedley Maclean. Since the benefit ascribed to chaulmoogra oil, its soaps or ethyl esters in the treatment of leprosy had led to the recommendation of similar compounds as a remedy in tuberculosis, experiments upon the value of chaulmoogra oil in the treatment of tuberculosis have been carried out in this department. Dr. Schütze and Dr. Zilva find that soaps of chaulmoogra oil, although they have a very decided bactericidal action on the tubercle bacillus in vitro, do not perceptibly impede development of the bacillus in vivo.

In the department of *Experimental Pathology* a great deal of work is being done on the vitamin contents of milk, cod-liver oil, green leaves, and other substances, by Dr. Harriette Chick, Dr. Ethel M. Luce, Miss M. A. Boas, and their colleagues. Dr. Chick is endeavouring to ascertain to what extent plants are dependent upon sunlight for the manufacture of vitamin A and anti-rachitic vitamin respectively. The first question has practical importance connected with the feeding of cattle designed to provide food in the form of meat and milk. The second has a wide scientific significance in regard to the origin of fat-soluble vitamins in nature. The inter-relation of vitamins and ultra-violet radiations is the subject of study by Miss E. H. Hume and Miss H. H. Smith. Dr. T. Lumsden's tissue culture work is familiar to our readers (THE LANCET, 1924, ii., 65; 1925, i., 383).

In the department for the *Study and Preparation of Antitoxic Sera*, an infection attacking the breeding stock of guinea-pigs, which occurred during the latter part of the year, led to a study of puerperal infection among these animals. The breeding sows alone were infected; the boars and young animals were exempt. Deaths occurred within a week or so of kindling down. The disease appears to be a chronic one, but becomes acute post partum. A pneumococcus was readily isolated from the heart blood and uterus of fatal cases, and in some instances from pneumonic patches in the lungs. It was also found in the fœtus. With the object of producing an active immunity the whole stock of guinea-pigs was treated with a multivalent vaccine prepared from the strains isolated. The results were encouraging.

In the department for the *Preparation and Study of Anti-Variolous Vaccine* at Marazion, Cornwall, Dr. A. P. Green has been studying the reaction of animals to revaccination. As found by Pirquet and Prowazek some years ago, an accelerated reaction was observed. This allergic response occurred about 24 hours after inoculation and was characterised by marked erythema and slight swelling at the seat of inoculation. The effect was transient. It was observed in all the animals experimented with. The occurrence of an accelerated reaction to vaccination has been recommended for the diagnosis of doubtful cases of small-pox, but in view of the above observations its applicability would appear to be confined to unvaccinated persons.

Foot-and-Mouth Disease.—In August last the governing body of the Institute agreed to place one of its laboratories, together with a suitable isolated and self-contained animal house, at the disposal of a committee appointed by the Ministry of Agriculture to investigate foot-and-mouth disease. The committee is presided over by Sir William Leishman, and includes Prof. W. Bulloch, Prof. C. J. Martin, and Dr. Arkwright among its members. Dr. Bedson has been seconded to work under the committee, and Dr. H. B. Maitland and Mrs. Burberry have been appointed to work with Dr. Bedson. The work is under the general supervision of Dr. Arkwright.

Financial Position of the Institute.—The total expenditure for the year was some £37,500, a decrease of about £6000 on that of last year. Of this sum, over £30,000 was obtained from the sale of sera, vaccines, and stock, and another £3600 from investigation, diagnosis, and analysis fees. The Institute has other sources of revenue in the way of interest and dividends on general investments, and the accounts show a balance of excess of income over expenditure of £11,000.

ROYAL COMMISSION ON NATIONAL HEALTH INSURANCE.—The twenty-seventh meeting of this Commission was held at the Home Office, Whitehall, on May 7th, Lord Lawrence of Kingsgate in the chair. Evidence was continued on behalf of the British Medical Association by Dr. R. A. Bolam, chairman of the Council, Dr. H. B. Brackenbury, chairman of the Representative Body, Dr. H. Guy Dain, chairman of the Insurance Acts Committee, Dr. Alfred Cox, medical secretary, and Mr. N. Bishop Harman, hon. treasurer. The following subjects were dealt with: The procedure for dealing with complaints against doctors, the work of medical institutions under Section 24 (1) of the Act, the need for a unified local health service and the administrative and financial arrangements in connexion therewith, the arrangements for the additional treatment benefits. Dr. Stanley Hodgson, chairman of the Salford Panel Committee, gave evidence on the Manchester and Salford method of payment of doctors on an attendance basis. Dr. J. P. Williams-Freeman, chairman of the Hampshire Panel Committee, gave evidence on the peculiar conditions of rural areas. Thereafter evidence was given on behalf of the Medical Practitioners' Union by Dr. Gordon Ward, Dr. E. A. Gregg, Dr. A. Welply, Mr. Charles Davis, and Mr. S. G. Davis on the various features of medical benefit under the insurance scheme and proposals for extension of that service. Proof copies of the oral evidence and the relative statements submitted at the meeting of April 23rd are now on sale at H.M. Stationery Office (2*s.* 3*d.*).

The Services.

Surg. Vice-Admiral J. Chambers, C.B., C.M.G., Director-General of the Medical Department of the Royal Navy, has been appointed an honorary physician to the King in the place of the late Surg. Vice-Admiral Sir Arthur W. May, K.C.B.

ROYAL NAVAL MEDICAL SERVICE.

Surg.-Comdr. L. Lindop is placed on the Retd. List with the rank of Surg. Capt.

ROYAL NAVAL VOLUNTEER RESERVE.

Proby. Surg. Lt. H. Nichol to be Surg. Lt.

ROYAL ARMY MEDICAL CORPS.

Maj. and Bt. Lt.-Col. J. G. Bell to be Lt.-Col., vice Lt.-Col. and Bt. Col. H. Ensor, promoted.

Maj. W. C. Nimmo is placed on the half pay list on account of ill-health.

Capt. L. T. Poole to be Maj.

SUPPLEMENTARY RESERVE OF OFFICERS.

Capt. J. A. Charles, from Reg. Army Res. of Off., R.A.M.C., to be Lt.

TERRITORIAL ARMY.

Surg. Lt. A. C. Ballance (late Royal Navy) to be Capt.

Capt. E. B. Keen to be Maj. (Prov.).

Capt. H. B. Logan resigns his commn. and retains his rank.

TERRITORIAL DECORATION.

The King has conferred the Territorial Decoration upon Col. F. G. Proudfoot; Lt.-Cols. R. M. Vick and Sir Ewen J. Maclean; Majs. R. Coffey, E. J. Boome, D. S. Sutherland, and A. E. Webb-Johnson.

ROYAL AIR FORCE.

Flight Lt. J. K. R. Landells is granted a permanent commission, Flying Officer J. B. Gregor is promoted to the rank of Flight Lt., and Squadron Leader J. H. Wood relinquishes his temporary commission on ceasing to be employed.

INDIAN MEDICAL SERVICE.

Majs. C. E. Palmer, C. H. Reinhold, W. D. Wright, J. F. Boyd, V. N. Whitamore, and W. J. Powell to be Lt.-Cols.

The King has approved the retirement of Majs. C. H. Cross (on account of ill-health) and J. A. Cruickshank.

On return from leave Lt. C. Mullins has been appointed Civil Surgeon, Lushai Hills. Major J. D. Sandes, officiating professor of clinical medicine, Medical College, Calcutta, and second physician to the College Hospitals, has been appointed to act as Principal and Professor of Medicine, Medical College, Calcutta, and First Physician, College Hospitals, vice Lt.-Col. F. A. F. Barnardo, granted leave. The Viceroy has appointed Col. L. F. Smith and Lt.-Col. E. P. Sewell to be Honorary Surgeons on his personal staff, vice Lt.-Col. E. Kyan and Brevet-Col. F. S. Irvine. The following postings of Civil Surgeons in the United Provinces of Agra and Oudh have taken place: Capt. A. Seddon to Saharanpur. Lt.-Col. M. R. C. MacWatters from Shahjahanpur to Meerut; Major R. S. Townsend from Jhansi to Bareilly; Dr. F. W. Holmes from Fatehpur to Gonda; and Dr. H. G. Mathur from Lucknow to Unao. Capt. G. H. Mahony, whose services had been placed temporarily by the Government of India Department of Education, Health, and Lands at the disposal of this Government, has been appointed to be Civil Surgeon and posted to the Amaoti district. The following officers have been granted leave: Lt.-Col. W. D. Richie, civil surgeon, Darrang; Major B. E. M. Newland, civil surgeon, Saharanpur; Lt.-Col. T. Hunter, civil surgeon, Lucknow Lt.-Col. E. C. Hepper, civil surgeon, Bareilly; Major C. H. Reinhold, civil surgeon, Meerut; and Major R. Knowles, professor of protozoology, School of Tropical Medicine and Hygiene, Calcutta. The Chancellor of the Patna University has nominated Lt.-Col. James Masson to be an ordinary fellow of the Senate of the Patna University, vice Col. H. Ainsworth, who has vacated his seat. Lt.-Col. J. D. Graham, Public Health Commissioner, is attending the meeting of the Office International d'Hygiène Publique at Paris as the representative of British India. He will also attend another meeting in London in connexion with matters arising out of the pilgrim traffic with Mecca. The first and principal item of the agenda of the Paris meeting is the project of revising the International Sanitary Convention of Jan. 17th, 1912. Lt.-Col. J. R. J. Tyrell, agency surgeon, acts as Political Agent during the absence on leave of Lt.-Col. G. H. Anderson.

Parliamentary Intelligence.

HOUSE OF LORDS.

WEDNESDAY, MAY 6TH.

The Use of Liquid Milk.

Viscount ASTOR asked whether the Government proposed to take administrative steps to stimulate the dairy industry and increase the use of liquid milk. Milk was the prime food of children, and its consumption in this country was only one-sixth of what it was in Switzerland and one-third of what it was in the United States. They ought to set out to improve the quality of milk in the next ten years. A great deal of the milk sold in London and other large cities had been partially pasteurised; that was a fraud on the public. There was great merit in sufficiently pasteurised milk, but he could see no argument in favour of partially pasteurised milk being sold as raw milk. A new and proper classification of milk was needed. Between 1871 and 1914 the population of this country increased by 60 per cent., but the number of cows only increased by 40 per cent. Between 1914 and 1924 the increase in the number of cows was only 5 per cent., while imports of condensed and dried milks and milk foods increased by 80 per cent.

Lord BLEDISLOE (Parliamentary Secretary, Ministry of Agriculture) said the Government recognised the extreme importance of the problem, but they feared lest in endeavouring to secure pure and disease-free milk for human consumption they might take steps which would tend to dry up the milk-supply altogether, or bring about a milk famine. They deplored the fact that consumption here was less than in other countries, but it was no good passing drastic laws if public opinion was not ripe to endorse them. The sad fact was that neither was the general public alive to the importance of pure milk, nor were farmers sufficiently appreciative of the need to be up to date in their methods compared with other countries to eliminate from their herds unsound cattle and to employ the cleanest possible methods of milk production. A good deal, however, was being done to educate both the public and the farmers.

HOUSE OF COMMONS.

WEDNESDAY, MAY 6TH.

Infection in Public Libraries.

Mr. GROVES asked the Minister of Health whether his attention had been called to the danger of infection to the frequenters of public libraries through the use of books previously handled by persons suffering from infectious ailments, or books having been in homes where infectious ailments had developed; and whether he would consider taking special steps to investigate these possible dangers to public health by calling the attention periodically of local authorities to the need of the utilisation of adequate disinfectants in the public libraries.—Sir KINGSLEY WOOD (Parliamentary Secretary to the Ministry of Health) replied: The answer to the first part of the question is in the affirmative, but my right hon. friend is advised that medical officers of health are fully alive to whatever danger of infection there may be from this source. Special provisions as to the precautions to be taken to prevent the spread of infection through the use of library books are contained in Section 59 of the Public Health Acts Amendment Act, 1907, and that section may be put in force in any district on the application of the local authority. In the circumstances my right hon. friend does not consider it necessary to undertake any special investigation or to issue any periodical instructions to local authorities on this matter.

Prohibition of Drugs in India.

Mr. CECIL WILSON asked the Under-Secretary of State for India whether his attention had been called to the report of the Bombay excise committee, in which it was recommended that prohibition of drink and drugs should be completed as early as possible; and whether, as the Bombay Government had passed a resolution upon the report to the effect that serious efforts should be made to surmount the financial and administrative difficulties, he could arrange for a copy of the report and of the resolution to be placed in the library.—Earl WINTERTON replied: The attention of my noble friend has been drawn to the report and resolution. The resolution adopts the recommendation of the committee that the Government should declare that the total extinction of the traffic in alcoholic drink and drugs by suitable steps is the goal of their excise policy, and states, in the words quoted by the hon. Member, that a serious effort should be made to surmount the difficulties, both financial and administrative, which stand in the way of the adoption of such a policy. It also outlines the action which the Government propose to take in the immediate future. A copy of the report and resolution will be placed in the Library of the House.

Protection from Anthrax.

Colonel DAY asked the Home Secretary whether he was aware of the fact that, at a recent inquest held in Southwark, it was proved that the death of a docker was found to be due to anthrax, contracted through dust rising from dry hides; were all the statutory precautions being taken at wharves where these hides were handled; and was he prepared to issue an Order for the compulsory sterilisation of all hides, with a view to minimising in every possible way the danger of anthrax infection.—Sir W. JOYNSON-HICKS replied: There have been two recent cases in this area. The statutory precautions applicable are those contained in the Hides and Skins Regulations made under the Factory and Workshops Act, 1901, and the Chief Inspector of Factories informs me that these are in general well observed, and that neither of the cases referred to was due to any breach of the regulations. I regret that it is not practicable to issue an Order as suggested, as there is at present no known effective method of sterilising hides which does not seriously damage them for commercial purposes.

Blind Persons in England and Wales.

Captain FRASER asked the Minister of Health how many blind persons over the age of 16 there were in the United Kingdom; how many of these were in the workhouses; how many lived in institutions and hostels for the blind; and how many in each of the above categories were totally blind or so blind as to be unable to do work for which eyesight was essential, respectively.—Mr. N. CHAMBERLAIN replied: According to the most recent returns, there are in England and Wales 33,564 blind persons over 16 years of age. Of these, it is estimated that approximately 3000 are in workhouses or workhouse infirmaries, 638 blind persons are resident in homes for the blind, and 190 in hostels. No statistics are available for the classification of these blind persons in the manner suggested in the last part of the question.

Mr. ROBERT YOUNG asked the Minister of Health the total number of blind persons in England and Wales respectively; and how many of these men and women were in receipt of an old age pension from 50 years of age and upwards.—Mr. N. CHAMBERLAIN replied: According to the most recent returns there are 36,518 blind persons in England and Wales. On March 31st last 12,024 of those persons between the ages of 50 and 70 were in receipt of the old age pension. Blind persons over 70 receive the old age pension on the ground of age and not of blindness, and no separate figures are available for this group.

THURSDAY, MAY 7TH.

Patients' Strike at Roehampton Hospital.

Colonel DAY asked the Minister of Pensions whether his attention had been drawn to the recent strike of the inmates of the Ministry's institution, Queen Mary's Hospital, Roehampton, arising out of the stoppage of week-end leave; and was he prepared to cause instructions to be given at this and other similar institutions that come under his authority that in future full facilities for week-end leave would be afforded those patients who were deemed medically fit for travelling and who were desirous of visiting their families.—Major TRYON replied: I have inquired into this matter and I find that a number of patients to whom the medical superintendent found himself unable to grant leave deliberately absented themselves without permission. The hon. Member will realise that these men are in hospital solely for the purpose of treatment with the object of improving their condition, and that, in considering any question of leave, regard must be paid to the requirements of the treatment prescribed and to the effective management of the institution. I may point out that the facilities granted are considerably in excess of those allowed by civil hospitals. I see no reason to alter the existing leave regulations which are working satisfactorily at other Ministry hospitals.

Pensioners and Treatment Allowances.

Mr. WINDSOR asked the Minister of Pensions whether, seeing that in the Supplementary Vote for that Ministry provision was made for an additional sum of £920,000 in respect of the payment of treatment allowances in excess of pension, why there was a reduction in the Estimates for the year 1924–25 of £1,110,500 in the provision for treatment and treatment allowances, of which sum practically £500,000 was in respect of allowances in excess of pension; and whether any instructions had been issued to the medical officers of the Ministry that they should as far as possible reduce the number of cases in which allowances should be paid even though the pensioner might be totally disabled, temporarily, as the result of his war disability.—Major TRYON replied: If the hon. Member will refer to the Supplementary Estimate for my department he will see that of the £920,000 mentioned in the first part of the question *only £130,000 was in respect of treatment allowances.* The reduction in the estimates for the cost of treatment during the present financial year anticipates a continuance of the decline in our requirements for treatment which has been a normal feature of pensions expenditure for several years past. No change has been made in the conditions of eligibility for treatment allowances and no instructions in the sense suggested by the hon. Member have been issued.

Separate Existence of Pensions Ministry.

Mr. ROBINSON asked the Minister of Pensions whether he had under consideration proposals to transfer the Ministry of Pensions to the Ministry of Health and for the termination of the Ministry *of Pensions as* a separate department in 1927.—Major TRYON replied: No, Sir; the Government have *no such proposals under consideration.*

Bursitis as an Industrial Disease.

Mr. TINKER asked the Home Secretary what decision he had arrived at in regard to the inclusion of bursitis in the schedule of industrial diseases for miners' beat-knee.—Sir W. JOYNSON-HICKS replied: No decision has yet been arrived at. As the hon. Member is perhaps aware, a committee of the Medical Research Council has submitted a report on miners' beat-knee, beat-hand, and beat-elbow, and the question—which is a very technical one—whether any *alterations in the present descriptions* of these *injuries* are necessary is being carefully considered in the light of that report. The *information in regard to the case* which the hon. Member brought to my notice will also be taken into account.

Edinburgh Production of Morphia, Heroin, and Codeine.

Lieut.-Commander KENWORTHY asked the Home Secretary how much, respectively, of morphia, heroin, and codeine was *made by the* two *factories in* Edinburgh in the year 1924; how much of each of these drugs was exported by British firms; *where they were sent; and how* were they despatched, whether shipped or sent by parcel post.—Sir W. JOYNSON-HICKS replied: The statistics *for* 1924 are not yet completed, but I can give provisional figures. The two manufacturing firms made 99,100 oz. of morphine, 16,700 oz. of heroin, and 153,300 oz. of codeine. 88,870 oz. of morphine were exported, but this figure includes the morphine contained in preparations made direct from raw opium. 10,704 oz. of heroin were exported. Statistics of the exports of codeine are not available. The destinations of the exports were approximately as follows: Europe received 60,000 *oz. of morphine and* 7600 oz. of heroin; Asia 12,500 oz. of morphine and 600 oz. of heroin; Africa 1100 oz. of morphine and 110 *oz. of heroin;* North and South America 9000 oz. of morphine and 700 oz. of heroin; Australasia 5700 oz. of morphine and 1600 *oz. of heroin.* The statistics do not distinguish between consignments sent by parcel post and others.

Labour Representation on Asylums Board.

Mr. SCURR *asked* the *Minister* of Health whether, when he was appointing persons to serve on the Metropolitan Asylums Board, he would *consider nominations made* by the London Labour Party and the London Trades Council.—Mr. N. CHAMBERLAIN replied: Yes, Sir.

Nursing Council Rules.

Major BARNETT asked the Minister of Health whether the General Nursing Council for England and Wales had yet submitted *for* his *approval* rules providing adequately for the direct representation of registered nurses on the Council, and the prescribed *scheme of* training required by the Nurses Registration Act, 1919; and, if not, whether he would consider the desirability of *appointing* a select committee to deal with these matters.—Mr. N. CHAMBERLAIN replied: The General Nursing Council have *submitted* a revised scheme for the election of nurse members and rules governing the training of candidates for admission to *the register.* In accordance with the promise given by my predecessor I am prepared to recommend the appointment of a select *committee to examine* the election scheme and to report upon the desirability of making the adoption of the Council's syllabus of training *compulsory.*

The Blind Persons Act.

Mr. ROBERT YOUNG asked the Minister of Health whether all local authorities concerned were giving effect to the provisions *of the Blind Persons Act,* 1920; and whether he could give the number of blind persons who were unemployed and employed, respectively, *and* the number of those who were under training and of those who were trained but unemployed.—Mr. N. CHAMBERLAIN replied: The answer to the first part of the question is in the affirmative. As regards the second part, the latest figures at present available relate to the year 1923. Of the blind population over school age, 20,750 were then returned as unemployable, 8235 as employed, 1246 as under training, and 880 as trained but unemployed.

Surgical Operations on Young Children.

Colonel DAY asked the Minister of Health whether, seeing that Westminster Hospital had provided facilities enabling mothers to be accommodated in the hospital to nurse back to health their babies who had undergone serious surgical operations, and that many similar operations were performed *in different* parts *of* the country at institutions governed by the local boards of guardians, he was prepared *to recommend to local unions the advisability of* making provision for such cases, in order that every endeavour *should be made to save the lives of such babies.*—Mr. N. CHAMBERLAIN replied: I am not aware of the nature of the *arrangements* to which the hon. *Member refers,* but I am making inquiries in the matter and will communicate with him further.

Pollution of Underground Water.

Lieut.-Colonel FREMANTLE asked the Minister of Health whether, when, and in what form, it was proposed to introduce legislation *for safeguarding* supplies and preventing pollution of underground water, as proposed in the report *of the Advisory Committee on Water, recently issued* by the Ministry of Health; and what steps would meanwhile be *taken to consult the interests affected.*—Mr. N. CHAMBERLAIN replied: I anticipate that the views of the interests affected by the report will be forthcoming at an early *date* as the result of the publication of the report. Before considering legislation I must, of course, consider those views, and I may add that there are some other matters relating to water-supplies on which legislation may be required and which the Advisory Committee is now proceeding to consider.

Trevethin Committee and Venereal Disease.

Mr. PETO asked the Minister of *Health whether the* report of the committee presided over by Lord Trevethin was accepted in principle by the Ministry of Health; *and* whether it was proposed to take any action to carry out the recommendations of the committee.—Mr. N. CHAMBERLAIN replied: The principal recommendations in the report of this committee have been accepted by my department, and action is being taken to give effect to them. As regards the recommendation in paragraph 14 of the report, I may say that I am still in correspondence on this matter with the two societies interested in the combating and prevention of venereal disease.

Health Insurance Surplus.

Mr. BENNETT asked the Minister of Health whether his attention had been called to the fact that the next valuation of the approved societies would show an available surplus for distribution of benefits of between £15,000,000 and £20,000,000; and whether he would consider the existence of such a surplus from the point of view of whether the *weekly contributions need* be on the present *large* scale, and from that of the possibilities of pooling health insurance with the *other social insurance schemes of* the Government respectively.—Mr. N. CHAMBERLAIN replied: I am aware that it has been estimated that the surpluses *available* for distribution as a result of the second valuation of the approved societies and branches may amount in the aggregate to the figures stated. As regards the second part of the question, the Royal Commission on National Health Insurance have now under review the whole financial structure of the scheme, and I propose to await their findings.

Infantile Mortality in Market Drayton.

Sir CHARLES OMAN asked the Minister of Health *whether* he had published the report as to high infantile mortality in Market Drayton by the medical woman whom last autumn he sent to inspect and report; whether he was aware that the figures for 1924 showed that the infantile mortality for *Market Drayton* was far more than twice as high as that for Newport and three times as high as that *for Wellington; and,* if he had not published it, would he do so at once.—Mr. N. CHAMBERLAIN replied: The answer to the first question is in the *negative.* The answer to the second is in the affirmative. I understand that the county council are taking steps to carry out the *suggestions* which I made to them as a result of the report of my medical officer. Accordingly I do not think the third part of the question arises.

Tuberculosis Care Committees' Finances.

Sir JOHN LEIGH asked the Minister of Health whether he was aware that a large balance of *unexpended contributions* had accumulated in the hands of tuberculosis care committees; what was the total for England and Wales; and how these sums would be utilised.—Mr. N. CHAMBERLAIN replied: The answer to the first part of the question *is in the negative. The income* of tuberculosis care committees is largely derived from voluntary sources, and I have no control over the *funds of these* committees. So far as I am aware it is exceptional to find that the income of such committees is in excess of their needs.

Vaccination and Small-pox.

Dr. WATTS asked the Minister of Health if he would furnish figures showing the number of children born, the number vaccinated, the number in respect of whom certificates of conscientious objection had been furnished by the parents during the four years ending Dec. 31st, 1924, and also the number of prosecutions which had been taken in respect of those who had neither been vaccinated or whose parents had not obtained certificates of conscientious objection; and would he take steps to ensure that the Vaccination Acts were properly administered.—Mr. N. CHAMBERLAIN replied: I am not yet able to give the information asked for in the first part of the question for the years 1923 and 1924. For 1921 and 1922 the figures are as follows:—

Year.	No. of births.	No. of children vaccinated.	No. of children in respect of whom certificates of conscientious objection were received.
1921	849,060	324,864	382,157
1922	780,277	314,550	347,511

I have no information as to the number of cases in which proceedings have been taken for the enforcement of the provisions of the Vaccination Acts during the years in question. As regards the last part of the question, the administration of the Vaccination Acts is in the hands of the boards of guardians and their vaccination officers.

Lieut.-Colonel FREMANTLE asked the Minister of Health the number of cases and deaths from small-pox for the first four months of this and the previous three years; the percentage of infant vaccinations to births in the last recorded period and in the previous corresponding periods since 1897; and whether he proposed to rely on present methods of sanitary administration and of vaccination administration to check the further spread of the disease or to promote, and, if so, in what way, a fuller recourse to protection by vaccination.—Mr. N. CHAMBERLAIN replied: The following are the figures asked for in the first part of the question:—

Period.	No. of cases of small-pox.	No. of deaths.
First 4 months of—		
1922	317	1
1923	692	—
1924	1569	3
1925	2214*	3

* Provisional figure.

The latest year for which the percentage of infant vaccination to births can at present be given is 1922. The figures for that and previous years were given in my reply to a question on this subject on April 9th. As regards the last part of the question, I am carefully watching the course of the present outbreak of small-pox, but as at present advised I do not consider it at this time necessary or expedient to modify the existing administrative arrangements for dealing with small-pox.

FRIDAY, MAY 8TH.

Blind Persons Bill.

Mr. R. YOUNG, in moving the second reading of the Blind Persons Bill, said that although there was only a comparatively small number of blind persons in the country they were sufficiently numerous to make it incumbent on the House to take action to place on the community the responsibity of providing sustenance for those who were incapable of looking after themselves, training for those who were capable of being trained, work for those who had been trained, and sustenance for those who by reason of their disability had grown prematurely old. He would not attempt to belittle the work which had been done by voluntary organisations such as St. Dunstan's, but that work demonstrated the clamant need of tackling the problem by municipal and national organisation and assistance. The Blind Persons Act of 1920 did not go far enough, and the present Bill, which was a non-party measure, provided that any blind person of 16 years of age and upwards unable to obtain employment in any workshop or place provided and maintained by the local authority in whose area he resided should receive 25s. per week so long as he was unemployed. County councils and councils of county boroughs would be responsible for providing workshops and institutions for the blind. There were at present 3000 blind persons in the workhouses, and these should be removed as soon as possible.

Captain FRASER, who is himself blind, opposed the measure on the ground that it proposed to municipalise all the enterprises and institutions which cared for the blind But having regard to the general desire in all parts of th House to do something for the blind he asked the Minist of Health to set up a select committee to examine wha had been done under the Blind Persons Act, 1920, and t see whether local authorities had done their best or not fo blind persons.

Sir KINGSLEY WOOD (Parliamentary Secretary to th Ministry of Health) said that the Government shared in th general desire to do everything possible to make the lot o blind people better and happier, and he agreed that it ough to be regarded as a non-party matter. The cost to the Exchequer under the existing Act was £467,000 a year, an it was estimated that the present Bill if passed would mea additional commitments by the local authorities of £1,400,00 per annum. He understood that no local authorities had been consulted with regard to the Bill. The proposal that blind persons unable to obtain employment should receiv 25s. a week was condemned by the advisory committe for the Welfare of the Blind on the ground that it would tend to mitigate individual effort on the part of blind persons. He thought good service was being done by the Ministry of Health in dealing with another side of the problem—the diminution of persons born blind, or who became blind up to the age of 5. The Government could not recommend the House to pass the second reading of the Bill.

Mr. RAINE, who had a motion on the paper for the rejection of the Bill, was speaking at 4 o'clock, when under the rules of the House the debate stood adjourned. The measure was accordingly "talked out."

MONDAY, MAY 11TH.

Education of Tuberculous Children.

Mr. GROVES asked the President of the Board of Education if he had any information respecting the number of children throughout the country suffering from tuberculosis for whom no educational provision was being made; and what steps he proposed to take in the matter.—Lord E. PERCY replied: According to the returns of local authorities for the year ended Dec. 31st last there were, in England and Wales, 8834 children suffering from some form of tuberculosis, who were attending no recognised school or institution. Probably some of these children could suitably be sent to open-air schools by local authorities, and I am doing all I can to encourage the development of this type of school; but the majority are not physically fit to receive formal instruction in school, and, therefore, fall outside the scope of my department.

Pensions Scheme and Health Insurance.

Sir WALTER DE FRECE asked the Minister of Health whether, in connexion with the new insurance scheme of the Government, it was proposed to pool, either eventually or immediately, on an actuarial basis, the contributions to the Health Insurance Fund and those for the new widows and old age pensions schemes.—Sir KINGSLEY WOOD (Parliamentary Secretary to the Ministry of Health) replied: No, Sir. The Bill provides that the part of the weekly contribution which is assigned to the scheme of contributory pensions is to be paid into a pensions account which will be kept entirely separate from the funds relating to national health insurance.

TUESDAY, MAY 12TH.

Birth-rate and Infantile Mortality in Large Towns.

Mr. GROVES asked the Minister of Health if he had any information showing that the large industrial towns with the greatest degree of unemployment showed the highest birth-rates, the greatest degree of overcrowding, and the highest mortality among infants; and what steps he proposed to effect alteration.—Sir KINGSLEY WOOD replied: The figures for certain districts with the highest average degree of unemployment for the 12 months ended February last indicate that in the majority of these districts the birth-rate and the infant mortality-rate for the year 1924, and the percentage of population living more than two persons to a room, according to the census returns for 1921, were above the average for England. There is not, however, sufficient correspondence between the figures to warrant any general conclusion. The Government are exploring all possible means of reducing unemployment, overcrowding, and infant mortality.

Deaths from Small-pox and other Diseases.

Colonel DAY asked the Minister of Health how many deaths had been registered during the half-year ending December last from small-pox, measles, pneumonia, scarlet fever, diphtheria, and influenza.—Sir KINGSLEY WOOD replied: For England and Wales the figures asked for are as follows: Small-pox, 3*; measles, 1317; pneumonia, 12,381; scarlet fever, 120; diphtheria, 1205; influenza, 2145.

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* In two of these cases small-pox was entered by the medical practitioner as a contributory cause of death.

Medical News.

UNIVERSITY OF OXFORD: *Fellowship in Physiology at New College.*—The College proposes to elect, not later than October next, to a Fellowship in Physiology. The person elected will be required to undertake, as from Michaelmas term next, the teaching of members of the College reading for the Honour School of Physiology and the medical examinations. Details of the appointment and forms of application can be obtained from the Warden. These forms, duly completed, should be returned to the warden not later than June 15th.

UNIVERSITY OF CAMBRIDGE.—An examination for Part II. of the Cambridge Diploma in Psychological Medicine will be held in London on June 10th, 11th, and 12th. Applications should be made at once to the Registrar, Cambridge University.

UNIVERSITY OF LONDON.—At the election of members to the Senate of the University, which took place on Tuesday, May 12th, Dr. Graham Little, M.P., polled 827 votes, against 281 for Mr. T. B. Layton, in the Faculty of Medicine.

LONDON HOSPITAL MEDICAL COLLEGE (UNIVERSITY OF LONDON).—On Tuesday, June 2nd, the distribution of prizes to successful students will be made by Dr. Charles Mayo, of Rochester, Minnesota, U.S.A., in the library of the College at Turner-street, Mile End, E., at 3 P.M. The distribution will be followed by a garden party.

KING'S COLLEGE HOSPITAL, LONDON.—Upon the recommendation of the medical board, the committee of management have created a new post of psycho-therapist on the honorary staff, and Dr. William Brown, Wilde Reader in Mental Philosophy in the University of Oxford, has been appointed to fill the position.

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH, ROYAL COLLEGE OF SURGEONS OF EDINBURGH, AND ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.—The following candidates having passed the requisite examinations have been admitted Diplomates in Public Health:—

David G. Anderson, Malcolm J. Bett, Angus H. Campbell, Agnes F. Dickson, William Fraser, Clara F. Gertzen, Jean M. Gilchrist, Mary M. Jack, James C. Lindsay, Peter L. McKinlay, Elizabeth P. Y. Paterson, George H. Percival, William C. Sharp, Annie V. Taylor, John Walker, Elizabeth Wheatley, Alexander B. Williamson, and Anne C. Wilson.

The following candidates passed Part I.: Ruth M. Allinson, Mary V. F. Beattie, Elizabeth S. Cook, Elsie B. Dickinson, Jane T. Gilmour, Hilda R. Hay, Reuben Levinson, William R. Logan, Elizabeth M. Mackay, Richard Norton, Margaret M. Paterson, Joseph Sachs, Donald A. M. Shearer, Malcolm Somerville, Jeanie M. Strathie, and Hector W. Sutherland.

The following candidate passed Part II.: George A. Pollock.

REBUILDING OF MIDDLESEX HOSPITAL.—In an illustrated article dealing with the present state of Middlesex Hospital we referred last week to a meeting of the Court of Governors which it was proposed to hold on May 11th to discuss the whole question of rebuilding. The meeting was held under the presidency of Prince Arthur of Connaught, and the decision of the hospital board was endorsed to rebuild the hospital and launch an immediate appeal for £500,000. It is satisfactory to note that already a preliminary list of donations totalling nearly £40,000 have been subscribed. The sum of £10,000 has been promised from the King Edward Hospital Fund, £10,000 from the trustees of the Ludlow Estate, £5000 from Mr. Vaughan-Morgan, £2500 from Mr. Ernest Debenham, £1000 from Mr. Collins, and a subscription of £2000 from Lord Rothermere and the *Daily Mail*. Messrs. W. and A. Gilbey have also given 1000 guineas. Some £30 had been sent in from former patients in shillings and half-crowns, while the nurses have promised £500. During the rebuilding of the institution the old infirmary buildings in Cleveland-street will be utilised and, given adequate public support, the work of the hospital will be carried on without curtailment. Among those who addressed the meeting were the Duke of Northumberland, Lord Cheylesmore, Lord Bearsted, Sir Arthur Stanley, Mr. T. P. O'Connor, M.P., Mr. Comyns Berkeley, Major Astor, M.P., and Sir John Bland-Sutton, President of the Royal College of Surgeons, who said that though in the new building it might not be possible to incorporate much of the old hospital, it would be possible to incorporate the wonderful spirit of the old founders and emulate the sympathy for the sick and suffering, which was the dominant feature of the men and women whose humanity led them to build the hospital. The President of the appeal committee is Lord Mildmay of Flete.

ABERDEEN UNIVERSITY CLUB, LONDON.—The bi-annual dinner of this club will be held at Gatti's Restaurant, Strand, London, on Thursday, May 21st, at 7.30 P.M., Sir Arthur Greer in the chair. Dr. W. A. Milligan, 11, Upper Brook-street, W. 1, the hon. secretary, will be pleased to hear from either men or women graduates wishing to join the club or attend the dinner.

ROYAL STATISTICAL SOCIETY.—A meeting of this society will be held on May 19th, at 5.15 P.M., in the hall of the Royal Society of Arts, John-street, Adelphi, London, W.C., when Sir Napier Shaw will read a paper on the Week or Month as an Intermediate Time-unit for Statistical Purposes.

LONDON HOSPITAL: NEW CLINICAL THEATRE.—Lord Bearsted recently laid the foundation-stone of a new clinical theatre with which he is presenting the hospital. He is providing £10,000, and whatever is left of that sum after the building is paid for is to be used in endowing a lectureship in connexion with it.

A CHURCH FOR THE DEAF AND DUMB.—St. Saviour's Church and Institute for the Deaf and Dumb in Oxford-street, London, has had to be pulled down owing to the expansion of the shopping area. Its place has been taken by a new church and institute at Acton, which was last week opened by Princess Mary.

LONDON JEWISH HOSPITAL.—Mr. Bernhard Baron has given £10,000 for the completion of the front block of this hospital on the understanding that the balance of the £25,000 required will be raised. Lord Rothschild, the President, announces that the work will therefore proceed immediately.

ROYAL MICROSCOPICAL SOCIETY.—A meeting of this Society will be held in the lecture hall, 20, Hanover-square, London, W., on Wednesday, May 20th. At 8 P.M. the following papers will be read and discussed: Prof. Robert Chambers (Cornell University Medical College): The Technique of Micro-dissection and Injection of Cells. Mr. F. I. G. Rawlins: A Note on the Use of the Neon Lamp in Microscopy (with demonstration by Mr. J. E. Barnard, F.R.S.). Dr. R. J. Ludford, Ph.D. (Institute of Anatomy, University College): The Cytology of Cancer.

ROYAL EAST SUSSEX HOSPITAL.—Although the income exceeded the expenditure by £2109 at this Hastings institution, it was explained at the eighty-fifth annual meeting, held on May 7th, that this was due to the wonderful and generous response from the public—something like £7000 being raised by way of extraordinary support—and not, as was hoped, an increase in the number of annual subscribers. Special appeals could not continually be made; annual subscribers were the backbone of the financial support of every hospital. The year's work of the institution showed an increase in all departments.

AMERICAN HOSPITAL COSTS.—The sixtieth annual report of the Boston City Hospital shows that the daily cost of each in-patient is 13*s.* 1*d.*; at the convalescent home it is about 10*s.* 6*d.* Out-patients cost 2*s.* per visit. The gynæcological and obstetrical work is increasing with such rapidity that it is difficult to cope with it—"serious results seem almost certain to occur" unless greater facilities are provided. Most of the great American hospitals are, indeed, faced with similar difficulties in consequence of the growing popularity of antenatal clinics and the resulting increase in the number of maternity patients.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—Dr. T. W. Eden will deliver a lecture on the Prevention of Puerperal Sepsis in the West Lecture Hall at 1, Wimpole-street, on Monday, May 18th, at 5.30 P.M. On the same date will begin the two weeks' course arranged for the convenience of general practitioners at the London Temperance Hospital from 4.30 P.M. A special course in Diseases of Infants will be held at the Infants Hospital from May 18th to 30th. A two weeks' afternoon course in Dermatology has been arranged from May 18th to the end of the month by the Hospital for Diseases of the Skin (Blackfriars), affording an opportunity for study in the out-patient department and venereal clinics. A special demonstration of cases will take place on May 19th. During June there will be the following courses: Diseases of the Chest, at the Victoria Park Hospital for Diseases of the Heart and Lungs; Gynæcology, at the Chelsea Hospital for Women; Tropical Medicine, at the London School of Hygiene and Tropical Medicine; Urology, at St. Peter's Hospital; Venereal Diseases, at the London Lock Hospital; and an intensive course in general medicine, surgery, and the specialties at the London Temperance Hospital. Copies of each syllabus may be obtained on application to the Secretary to the Fellowship, 1, Wimpole-street, London, W. 1, from whom also a copy of the programme of work may be

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Tuesday, May 19th.

GENERAL MEETING OF FELLOWS: at 5.30 P.M.
Ballot for election to the Fellowship.

Wednesday, May 20th.

HISTORY OF MEDICINE: at 5 P.M.
Annual General Meeting:
Election of Officers and Council for 1925–1926.
Paper:
Mr. W. H. S. Jones: The Historical Value of the Hippocratic Collection.
Exhibit:
Mr. C. E. Wallis: Eighteenth Century Apothecaries' Indentures.

Thursday, May 21st.

DERMATOLOGY: at 5 P.M. (Cases at 4 P.M.)
Annual General Meeting:
Election of Officers and Council for 1925–1926.
Nomination of Corresponding Members.
Cases:
The following will be shown by:—
Dr. H. W. Barber: (Private case) Lichen Nitidus with Lesions on Hard Palate.
Dr. H. MacCormac: (Private case) Leprosy.
Dr. H. C. Semon: Acne Varioliformis.
Dr. J. M. H. MacLeod: Sarcoid.
Dr. G. B. Dowling: Sections of Urticaria Pigmentosa.
Paper:
Prof. Bosellini (Bologna).
The Annual Dinner, at which Prof. Bosellini will be the guest of the Section, will take place at Oddenino's Restaurant, Regent-street, W., on the same evening, at 7.15 for 7.30 P.M. Price 12*s.* 6*d.*, exclusive of wine, payable at the table.

Friday, May 22nd.

STUDY OF DISEASE IN CHILDREN: at 5 P.M. (Cases at 4.30 P.M.)
Annual General Meeting:
Election of Officers and Council for 1925–1926.
Cases will be shown.

Saturday, May 23rd.

BALNEOLOGY AND CLIMATOLOGY:
Annual Provincial Meeting in Brighton:
The Annual General Meeting will be held, by kind permission of the Mayor and Corporation, in the Pavilion, at 3.30 in the afternoon, for the election of Officers and Council.
Dr. Duncan Forbes, M.O.H. Brighton, will read a paper on the Climate of Brighton.
Fellows, Members, and their wives will be received at 4.30 P.M. at the Pavilion by His Worship the Mayor of Brighton, who will kindly provide tea.
The Director of the Pavilion, Mr. Henry D. Roberts, will give a short address on its history, and conduct the party over the building.
The Annual Banquet will take place at the Hotel Metropole.

ROYAL INSTITUTION, 21, Albemarle-street, W.
TUESDAY, May 19th.—5.15 P.M., Prof. R. Whiddington: Passage of Electricity Through Vacuum Tubes (I.).
FRIDAY.—9 P.M., Dr. Thorne M. Carpenter: Metabolism of Man and Animals.

MEDICO-LEGAL SOCIETY, 11, Chandos-street, Cavendish-square, W.
TUESDAY, May 19th.—8.30 P.M., Dr. L. A. Weatherly: Medical Aspects of Some Murder Cases in which Insanity was the Defence. To be followed by a Discussion.

ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE, 11, Chandos-street, Cavendish-square, W.
THURSDAY, May 21st.—7.15 P.M., Demonstration by Lieut.-Colonel J. Cunningham, I.M.S. 8.15 P.M., Paper on Serological Observations on Relapsing Fever in Madras.

TUBERCULOSIS SOCIETY.
FRIDAY, May 22nd.—8 P.M. (at the House of the Society of Medical Officers of Health, Upper Montague-street, Russell-square), Dr. R. Gloyne: Pulmonary Conditions Simulating Tuberculosis.

LONDON DERMATOLOGICAL SOCIETY, St. John's Hospital, 49, Leicester-square, W.C.
WEDNESDAY, May 20th.—4.30 P.M., Clinical Cases and Specimens. 5.15 P.M., Dr. Prosser White: Cutaneous Sensitisation in Industrial Dermatoses.
The monthly dinner will be held at the Cavour Restaurant, Leicester-square, in a private room at 6.30 P.M. Will Fellows intending to be present kindly inform the Hon. Secretary before the meeting.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.
MONDAY, May 18th, to SATURDAY, May 23rd.—WEST LECTURE HALL, Royal Society of Medicine. Lecture arranged by the Fellowship of Medicine and open to all members of the medical profession. At 5.30 P.M., Dr. T. W. Eden: The Prevention of Puerperal Sepsis.—LONDON TEMPERANCE HOSPITAL, Hampstead-road, N.W. Special Post-Graduate Course for Practitioners. Daily at 4.30 P.M. Clinical demonstration for one hour, followed by a lecture for half an hour. General medicine, surgery, and special departments.—INFANTS HOSPITAL, Vincent-square, S.W. Special Course in Diseases of Infants. Lectures and demonstrations every afternoon. "Round-table" Conference on Friday, and special visits on Saturday afternoon and Sunday morning.—HOSPITAL FOR DISEASES OF THE SKIN, Blackfriars, S.E. Post-graduate Course in Dermatology, consisting of instruction in the out-patient department every afternoon, and a Venereal Clinic on Tuesday and Friday. Special demonstration of interesting cases on Tuesday, May 19th.—CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn-road, W.C. Special Course in Laryngology, Rhinology, and Otology. Daily operations, lectures, and clinics. Morning and afternoon sessions. Operative surgery class every morning. Clinical and Operative courses may be taken separately, or combined.—MAUDSLEY HOSPITAL, Denmark-hill, S.E. Course in Psychological Medicine. Lectures on the Psychoneuroses, the Practical Aspect of Mental Deficiency, the Pathology of Mental Diseases; and Demonstrations in Clinical Psychiatry and Clinical Neurology.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen-square, Bloomsbury, W.C. 1.

POST-GRADUATE COURSE: MAY–JUNE, 1925.

CLINICAL LECTURES AND DEMONSTRATIONS.

MONDAY, May 18th.—2 P.M., Out-patient Clinic: Dr. Hinds Howell. 3.30 P.M., Syphilis of Nervous System: Dr. Adie.
TUESDAY, May 19th.—2 P.M., Out-patient Clinic: Dr. Walshe. 3.30 P.M., Peripheral Neuritis: Dr. Birley.
THURSDAY, May 21st.—2 P.M., Out-patient Clinic: Dr. Kinnier Wilson. 3.30 P.M., Encephalitis Lethargica and its Sequelæ: Dr. Hinds Howell.
FRIDAY, May 22nd.—2 P.M., Out-patient Clinic: Dr. Gordon Holmes. 3.30 P.M., Auditory Nerve Tumours: Mr. Sydney Scott.

COURSE OF LECTURES AND DEMONSTRATIONS ON THE PATHOLOGY OF THE NERVOUS SYSTEM.

MONDAY, May 18th.—12 noon, The Cerebro-Spinal Fluid. Physiology and Pathology: Dr. J. G. Greenfield.

COURSE OF LECTURES AND DEMONSTRATIONS ON THE ANATOMY AND PHYSIOLOGY OF THE NERVOUS SYSTEM.

TUESDAY, May 19th.—12 noon, Structure of Spinal Cord, Brain-stem, and Cerebellum.
THURSDAY, May 21st.—12 noon, The Physiology of the Motor System: Dr. Walshe.

Dr. H. J. Macbride will give a COURSE OF EIGHT CLINICAL DEMONSTRATIONS, chiefly on METHODS OF EXAMINATION OF THE NERVOUS SYSTEM, in the Wards at 10 A.M. on Tuesdays and Fridays, if sufficient entries are received. The fee for this Course will be £2 2*s.* (commencing Tuesday, May 19th).

Mr. Armour and Mr. Sargent operate at the Hospital on Tuesday and Friday mornings at 9 A.M., or at such other times as may be announced.

Any part of the Course may be taken separately. Special arrangements will be made for those unable to take the whole Course.

Fees should be paid to the Secretary of the Hospital at the Office on entering for the Course.

J. G. GREENFIELD, Dean of Medical School.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.
MONDAY, May 18th.—12 noon, Mr. Simmonds: Applied Anatomy. 2 P.M., Dr. Scott Pinchin: Medical Out-patients. 2 P.M., Mr. Bishop Harman: Eye Dept.
TUESDAY.—10 A.M., Medical Registrar: Clinical Methods. 12 noon, Dr. Burrell: Chest Cases. 2.30 P.M., Mr. Tyrrell Gray: Surgical Wards.
WEDNESDAY.—2 P.M., Dr. Burnford: Medical Wards. 2 P.M., Dr. Owen: Medical Out-patients. 2.30 P.M., Mr. Donald Armour: Surgical Wards.
THURSDAY.—10 A.M., Dr. Grainger Stewart: Neurological Dept. 11 A.M., Sir Henry Simson: Gynæcological Wards. 2 P.M., Mr. MacDonald: Genito-Urinary Dept.
FRIDAY.—12 noon, Surgical Registrar: Surgical Pathology. 2 P.M., Mr. Sinclair: Surgical Out-patients. 3 P.M., Dr. Pritchard: Medical Wards.
SATURDAY.—10 A.M., Dr. Saunders: Medical Diseases of Children. 10 A.M., Mr. Banks-Davis: Operations on Throat, Nose, and Ear.
Daily, 10 A.M. to 6 P.M., Saturdays, 10 A.M. to 1 P.M., In-patients, Out-patients, Operations, Special Departments.

UNIVERSITY COLLEGE, Gower-street, W.C.
FRIDAY, May 22nd.—5.30 P.M., Prof. G. Elliot Smith, F.R.S.: The Taungs Skull—Missing Links.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

TUESDAY, May 19th.—4.30 P.M., Opening Lectures of Summer Session, Mr. H. W. Carson: The Diagnosis and Prognosis of Cancer of the Rectum.

FRIDAY.—4.30 P.M., Mr. J. Howell Evans: Hydrocele, Hæmatocele, and Pyocele.

Daily.—Clinics in General and Special Departments, Demonstrations, Operations, &c.

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, Leicester-square, W.

TUESDAY, May 19th.—5 P.M., Dr. MacCormac: Acne Vulgaris.

THURSDAY.—5 P.M., Dr. Griffith: Skin Eruptions of Syphilis.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.

THURSDAY, May 21st.—4 P.M., Dr. T. Thompson: Mental Deficiency in Children.

ST. MARY'S HOSPITAL INSTITUTE OF PATHOLOGY.

THURSDAY, May 21st.—5 P.M., Prof. E. W. Macbride: The Inheritance of Acquired Qualities.

UNIVERSITY OF LIVERPOOL POST-GRADUATE LECTURES. (At 3.30 P.M.)

MONDAY, May 18th.—(At the Shaw-street Hospital.) Mr. Leyland Robinson: Treatment of Fibroids.

TUESDAY.—(At the Maternity Hospital.) Dr. J. W. Burns: Placenta Prævia and Accidental Hæmorrhage.

WEDNESDAY.—(At the St. Paul's Eye Hospital.) Mr. Haward Bywater: Clinical Cases.

THURSDAY.—(At the St. George's Skin Hospital.) Dr. F. H. Barendt: Skin Cases.

MANCHESTER ROYAL INFIRMARY.

TUESDAY, May 19th.—4.15 P.M., Mr. J. P. Buckley: Practical Points in Relation to Hernia.

FRIDAY.—4.15 P.M., Miss Pelle: Massage Demonstration. Mr. J. P. Buckley: Surgical Demonstration.

UNIVERSITY OF SHEFFIELD FACULTY OF MEDICINE.

TUESDAY, May 19th.—8.45 P.M. (In the Medical Library), Prof. Dr. B. Brouwer (University of Amsterdam): The Projection of the Retina in the Brain (in English).

Appointments.

JACOB, F. H., M.D. Lond., has been appointed one of the Medical Referees under the Workmen's Compensation Act for the Districts of the Newark and Nottingham County Courts.

PHILLIPS, P., M.B., Ch.B. Bristol, Medical Superintendent of the Southmead Hospital.

RAINES, R., M.R.C.S., L.R.C.P. Lond., D.P.H., Deputy Assistant Medical Officer of Health, Hull and Goole Port Sanitary Authority.

Cardiff Health and Education Authority: **BETENSON, W. F. W.**, M.B., Ch.B. Aberd., D.P.H., and **ROBERTS, T. E.**, M.B., B.S. Lond., D.P.H. Camb., School Medical Officers.

King's College Hospital: **PLAYFAIR, H. J. M.**, M.D. Lond., F.R.C.P. Lond., Consulting Obstetric and Gynæcological Surgeon and Emeritus Lecturer on Obstetric and Gynæcological Surgery; **GILLIATT, W.**, M.D., M.S. Lond., F.R.C.S. Eng., Obstetric and Gynæcological Surgeon; **PALMER, A. C.**, M.B., B.S. Lond., F.R.C.S. Eng., Junior Obstetric and Gynæcological Surgeon; and **WILTSHIRE, H. W.**, M.D. Camb., F.R.C.P. Lond., Consulting Physician.

New Sussex Hospital for Women and Children, Brighton: **WAUCHOPE, G. M.**, M.B., B.S. Lond., Honorary Assistant Physician; **RICKARDS, E.**, M.B., M.S. Lond., F.R.C.S. Eng., Temporary Assistant Surgeon; **LOGAN, B. M.**, M.B., Ch.B. Aberd., Assistant Anæsthetist.

Vacancies.

For further information refer to the advertisement columns.

Brighton, Hove Hospital.—R.M.O. £175.

Brighton, Royal Sussex County Hospital.—H.P. £150.

Cambridge, Papworth Hall.—Asst. M.O. £300.

Cancer Hospital, Fulham-road, S.W.—H.S. at rate of £100.

Carshalton, Surrey, Queen Mary's Hospital for Children.—Jun. Asst. M.O. £500.

Cassel Hospital for Functional Nervous Disorders, Swaylands, Penshurst, Kent.—R.M.O. £400.

Central London Ophthalmic Hospital, Judd-street, W.C.—Pathologist. £75.

Charing Cross Hospital, W.C.—Res. Anæsthetist at rate of £100.

Chelsea Hospital for Women, Arthur-street, S.W.—Sen. and Jun. H.S.'s at rate of £120 and £100 per annum respectively.

Chester Royal Infirmary.—Hon. Surg.

Doncaster Royal Infirmary.—Asst. H.S. £150.

Dreadnought Hospital, Greenwich.—Anæsthetist. 50 guineas.

East Lancashire Tuberculosis Colony and Sanatorium, Barrowmore Hall, Great Barrow, near Chester.—Asst. M.O. £250.

East London Hospital for Children, &c.—Morning Cas. O. at rate of £120. Also Anæsthetist. £50.

Essex, Administrative County of.—Asst. Tuberculosis O. £600.

Elizabeth Garrett Anderson Hospital, Euston-road, N.W.—H.P., Obstet. Asst., and two H.S.'s. Each at rate of £50.

Evelina Hospital for Children, Southwark, S.E.—H.P. £120. Also Hon. H.P. to Out-patients.

Gloucestershire Royal Infirmary and Eye Institution.—Asst. S.

Huddersfield Royal Infirmary.—Jun. H.S. £150.

Lanark County.—Bacteriologist and Pathologist. £750.

London Temperance Hospital, Hampstead-road, N.W.—Res. M.O. at rate of £175.

Maidstone, Kent County Ophthalmic Hospital.—H.S. £300.

Manchester City.—Female M.O. £632 7*s.* 8*d.*

Manchester, East Lancashire Homes for Disabled Sailors and Soldiers, Broughton House, Park-lane, Kersal.—Res. Med. Supt. £400.

Metropolitan Hospital, Kingsland-road, E.—Asst. P.

Middlesex County Council.—Deputy County M.O.H. at rate of £900.

Mildmay Mission Hospital, Austin-street, Bethnal Green, E.—Sen. Res. M.O. £140. Also Jun. Res. M.O. £100.

Miller General Hospital for South-East London, Greenwich-road, S.E.—Res. Cas. O. £150.

Monmouthshire County Council.—Asst. M.O. £500.

Newcastle-upon-Tyne, Royal Victoria Infirmary.—Hon. S.

Nuneaton, Caldecote Hall, Home for Male Inebriates.—Res. Med. Supt. £400.

Oxford, Radcliffe Infirmary and County Hospital.—H.S. and Cas. H.S. Each at rate of £120.

Paddington Metropolitan Borough.—M.O.H. £1000.

Patna, India, Medical College.—Prof. of Pharmacology, Prof. of Anatomy, and Prof. of Physiology. Each Rs.1200 per mensem.

Portsmouth, Royal Portsmouth Hospital.—Cas. O. at rate of £100.

Radcliffe-on-Trent, Notts County Mental Hospital.—Jun. Asst. M.O. £300.

Royal College of Surgeons of England.—Election to Court of Examiners. Also Professors and Lecturers.

Royal Dental Hospital of London, Leicester-square, W.C.—Two Hon. Asst. Dent. S.'s.

Royal Northern Hospital, Holloway, N.—Obstet. S.

Royal Waterloo Hospital for Children and Women, Waterloo-road, S.E.—Cas. O. £150. H.S. and H.P. Each at rate of £100. Also Hon. P. and Asst. in X Ray Dept.

St. Bartholomew's Hospital, Special Treatment Centre, Golden-lane.—Clin. Asstships.

St. Mary Abbots Hospital, Marloes-road, Kensington.—Fourth Asst. M.O. £335 6*s.*

Salford Union Infirmary, Hope, Pendleton, near Manchester.—Asst. Res. M.O. at rate of £275.

Shrewsbury Borough.—M.O.H., &c. £800.

Stoke-on-Trent, Bucknall Infectious Diseases Hospital.—Asst. M.O. £200.

Truro, Royal Cornwall Infirmary.—H.S. £170.

Victoria Hospital for Children, Tite-street, Chelsea, S.W.—Hon. P. to Out-patients.

Wigan Infirmary.—Third H.S. at rate of £150.

Wolverhampton and Staffordshire Hospital.—R.M.O. at rate of £150.

The Chief Inspector of Factories, Home Office, London, S.W., announces vacant appointments at Borrowash, Derby; and Yaxley, Hunts.

Births, Marriages, and Deaths.

BIRTHS.

HORGAN.—On May 4th, at Rua do Sacramento á Lapa 25, Lisbon, the wife of Dr. D. St. Heller Horgan, of a son.

MILLS.—On May 2nd, at Lancaster House, Southwold, Suffolk, the wife of Major P. S. Mills, I.M.S., of a daughter (Anne).

MARRIAGES.

CROOKSHANK—BONHOURE.—On May 9th, in London, F. G. Crookshank, M.D., F.R.C.P., to Hélène, second daughter of the late Prof. Gustave Bonhoure, of Vendôme.

HUTTON—LINTOTT.—On April 30th, at Godalming, Samuel King Hutton, M.B., F.R.G.S., of "Kivalek," Parkstone-road, Poole, to Mary, daughter of Henry Lintott, Esq., of Chiddingfold, Surrey.

SHEPHERD—WISEMAN.—On May 7th, at Aurdal, Norway, Charles Woolley Sheppard, M.B., B.S., of St. Andrew's-crescent, Cardiff, to Aagot "Mosse," youngest daughter of Dr. and Mrs. Wiseman, of Tonsaasen, Norway.

DEATHS.

DUGUID.—On May 5th, in a nursing home at Aberdeen, William Robert Duguid, M.B., C.M., aged 56 years.

HUME.—On May 6th, at Fircroft, St. Mary Church, Torquay, Walter Augustus Hume, M.R.C.S., L.S.A., in his 69th year.

TRAVIS.—On May 4th, at the residence of Mr. John Hughes, The Manor House, Hampton, Middlesex, William Owen Travis, M.D., aged 68 years.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Comments, and Abstracts.

TUBERCULOSIS WORK IN CANADA.

In an address which he gave recently to the Society of Superintendents of Tuberculosis Institutions, Dr. R. E. Wodehouse, Secretary of the Canadian Tuberculosis Association, showed by statistics the remarkable fall in the death-rate from tuberculosis in Canada since 1901, with more detailed figures showing the same fall in the industrial city of Hamilton, Ontario. In 1901 the death-rate from all forms of tuberculosis in Canada was 180; in 1924 it was 81·7 per 100,000 of the population. Hamilton showed a fall from 121 per 100,000 in 1905 to 43·4 in 1924. In this city the deaths from non-pulmonary tuberculosis averaged 15 per cent. of the total deaths from tuberculosis, and showed practically the same fall in the death-rate as in the case of pulmonary tuberculosis. The death-rate from tuberculosis was falling faster than the death-rate from all causes, the former being approximately 8 per cent. of the latter in 1905 and 5 per cent. in 1924. In Hamilton in 1913 and 1914 there was a backward wave in the tuberculosis death-rate which could not have been a war effect. In the different provinces in Canada the tuberculosis death-rate per 100,000 in 1922 was 132 in Nova Scotia and 121 in Quebec, while only 66 in Ontario, 71 in British Columbia, 60 in Manitoba, 51 in Alberta, and 44 in Saskatchewan. The number of sanatorium beds provided per 100,000 of population was low in Quebec (21), high in Nova Scotia (62), Manitoba (61), and Ontario (68), and intermediate in the other provinces named. This represented on the average 635 beds per 1000 deaths. The chief feature of these statistics was the backwardness of the province of Quebec, with mainly a French population. A large provision of new beds was, however, being made in Quebec. The general hospitals aided by government grants in Alberta, British Columbia, Manitoba, Ontario, and Saskatchewan kept 10 per cent. of their beds for tuberculous patients.

In Canada there were, Dr. Wodehouse said, no tuberculosis officers. The work was done by travelling diagnosticians and by the staffs of sanatoriums to whom the general practitioners sent cases for examination. Children with defective teeth had a 12 per cent. higher incidence of tuberculosis. He outlined the scheme for dealing with tuberculosis in Quebec, which was similar to the Framingham experiment. He emphasised the difficulties of the work among the Indians because of their nomadic instincts. Yet with them wonderful results were obtained despite their lack of rest and terrific output of energy, if only the diet were made abundant. In Canadian sanatoriums the tendency was to rest even afebrile patients for long periods, and graduated labour was not looked upon with favour. The cases were in a more advanced stage than in English sanatoriums. Sanatorium costs were usually from 10s. to 12s. per patient per day as compared with an average of 6s. in England, the greater cost being due to the generally higher standard of wages.

In regard to vocational training, it was pointed out that few who received such training stuck to it permanently, and it was therefore being abandoned as being neither feasible nor wise. New York had similarly given up factories for tuberculous people and had resorted to placing the tuberculous in ordinary industries. There was no real isolation of cases but a distinct policy of getting cases into sanatoriums for prolonged treatment. Compulsion, though provided by the law, was not enforced. Hitherto all effort in Canada had been concentrated on pulmonary tuberculosis, and surgical tuberculosis had been left to the general and children's hospitals to deal with. Sanatoriums were well heated in winter and were mainly built of wood, a material regarded in Canada as "permanent."

In thanking Dr. Wodehouse for his address, Dr. James Watt, President of the Society, said that the Canadian figures showed health activities to be responsible for a falling tuberculosis death-rate. In this country too much stress, he suggested, had been laid on improvement in economic conditions.

RE-EDUCATION IN ALEXIA.

To the Editor of The Lancet.

Sir,—In the treatment of disorders of speech it is not uncommon to meet with cases of aphasia in which a defect of speech may be found in conjunction with another allied defect. The following case may prove of interest.

A boy, aged 11, a patient at the West London Hospital, was sent to me for treatment. He had had meningitis two years previously, and since then had entirely lost the power to read—a type of aphasia classed as alexia. Before the onset of the illness he had done well at school, and passed the usual standards. At five years old he had been a good reader for his age. At the time that he came to me, in addition to the alexic condition, he stammered badly when excited, but all his other faculties were intact, and his intelligence appeared perfectly normal. He suffered from night-terrors, and was otherwise of a highly-strung, nervous temperament.

The plan on which I proceeded to deal with the condition of alexia was that of establishing a complete mental cycle. I selected several objects in common use, or commonly seen, the names of which consisted of one syllable (later two), and of two, three, or four letters, such as ink, cap, bag, bat, ball, hat, dog. Pointing to one such object I would get him to name it. When he had said the word I made him repeat it carefully, listening to his own pronunciation, and then analyse the sounds of which it consisted, as in the teaching of phonetics. I then got him to name the letter represented by each sound respectively, in order of occurrence, and having done so, to write it down, until the complete word was written. He then had to pronounce the word again while looking at it, first as written down by himself, and immediately afterwards from a blackboard on which I wrote it. Finally, having thus named the written word, he was asked to point out the object which it represented, thus arriving back at the point from which he had started and so completing the circuit. After a few words had been worked through in this way, the first word would be returned to and read from the blackboard without the preliminary process of object-recognition, thus encouraging the establishment of word-memory images, and the words so read on one day would be repeated on the next, while the longer process of linking up associations was gone through with fresh objects—verbs being represented by the appropriate actions.

The plan was successful. After about three weekly visits (the procedure meanwhile being followed up at home) the patient was reading simple sentences with creditable ease, and once the wheel had, so to speak, been set revolving, the power to recognise other words returned.

I am, Sir, yours faithfully,
(Miss) W. Marshall Ward,
Instructor for Speech Defects at the West London and Bethlem Royal Hospitals; Director of the Western Speech Clinic.
May 11th, 1925.

CLEAN MILK IN HOSPITALS.

Dr. Chalmers Watson has been able to obtain simultaneous insertion of his article on Clean Milk in four principal Scottish daily journals. He lays stress on the amazing fact that apparently none of the leading general hospitals or children's hospitals in Scotland have given serious consideration to their milk-supply. This, he thinks, is the more remarkable, inasmuch as two-thirds of disease in children's hospitals arises directly from defective nutrition and very largely from the impurity of the milk-supply. There are, he adds, at the present time, only 12 producers of certified milk in Scotland and 21 producers of Grade A tuberculin tested. Although the number of clean milk producers may be six or seven times as large in England, he has ascertained that practically no hospital, save perhaps local hospitals in the immediate vicinity of a producer's farm, takes certified milk. Several hospitals are making inquiries at the present time as to the use of Grade A tuberculin tested, while St. Bartholomew's Hospital actually uses it. Middlesex Hospital obtains Grade A milk for the maternity and children's ward and for all throat cases, and proposes to extend its use. Certain local authorities also have instructed their milk dealers that, as from July next, their welfare centres must be provided with Grade A T.T. In this connexion the borough of Bermondsey is quoted as taking the lead.

WATER-PIPES AND ELECTRIC CURRENTS.

In a recent article Dr. J. C. Thresh (The Lancet, March 28th, p. 676) stated that copper water-pipes should not be used for earthing electric current for fear of setting up electrolytic action, whereby copper would go into solution. A correspondent inquires whether any similar objection applies to attaching the earth-wire of a "wireless" set to a lead pipe or watertank. We are informed that using such pipes for wireless earths cannot possibly affect either the pipes or the water, as any currents that would flow to earth through them besides being infinitesimal in amount are rapidly alternating and so could have no electrolytic action. The situation is entirely different in regard to the earthing of the returning track and conductors of a tramway system where a few hundred ampères of direct current may be flowing about in the earth and be very willing to accept the help of any metallic conductor, such as a pipe, on their way back to the power station. This nuisance has, of course, long ago been dealt with to everyone's satisfaction by the Board of Trade.

MR. GREIFFENHAGEN'S PORTRAIT OF SIR DONALD MACALISTER.

A reference made last week to the possible destination of Mr. Greiffenhagen's portrait of Sir Donald MacAlister has brought us the information that the picture exhibited at Burlington House is taken from the one presented by Lady MacAlister to the General Medical Council.

An Address

ON THE

SIGNIFICANCE OF OCULAR SYMPTOMS.

Delivered before the Wimbledon Medical Society

BY PERCY FLEMMING, F.R.C.S. ENG.,

CONSULTING OPHTHALMIC SURGEON, UNIVERSITY COLLEGE HOSPITAL; CONSULTING SURGEON, MOORFIELDS EYE HOSPITAL.

I HAVE chosen for my subject the significance of ocular symptoms, because, whatever our line of practice may be, it is obvious that our object is to do the best we can to relieve the patient's ailments, and the first step to be taken to attain this end is to find out what the patient is complaining of, in other words, to listen to his symptoms. This is often enough a tedious business, but I am sure it pays in the end to listen. Having heard the patient's symptoms, one should be able in a general way to estimate their significance and then ascertain by physical examination their special significance in this particular case.

PAIN.

Naturally the first symptom to deal with is pain. It is, of course, impossible to measure its severity; as good a guide as any is whether it keeps the patient awake at night or not. Pain in connexion with the eye of sufficient severity to prevent sleep, and at the same time associated with redness of the eye, suggests iritis, glaucoma, a foreign body, or abrasion of the cornea. The pain of iritis and glaucoma may be much the same—severe and deep-seated, round the eye, extending into the jaws, and occasionally producing vomiting. In the slighter cases of glaucoma it may be not severe enough to prevent sleep altogether and in such circumstances it usually disappears as a result of the sleep. So much importance is attached, and rightly so, to the fact that the pain of glaucoma usually prevents sleep, that the significance of a pretty severe eye pain which is relieved by sleep may be misunderstood. The condition of the pupil enables a diagnosis to be made between iritis and glaucoma—small in iritis, dilated in glaucoma—and I would point out the advisability of making a record in any given case of the state of the pupil before either eserine or atropine is instilled. It is in such cases as these that a second opinion may be asked for, and the difficulty of diagnosis is much increased if the state of the pupil at the time of the onset of the pain is not known. Pain due to a foreign body or abrasion is intense but spasmodic, coming on with the movement of the eyelids, and therefore, *not uncommonly occurring at the moment of waking*; a drop of fluorescein followed by cocaine is a most useful method of revealing the presence of an abrasion or foreign body.

If the eyeball is quite normal in appearance and yet is said to be the seat of severe pain, it is possible that the pain may be exaggerated; but it is worth while *keeping in mind the possibility* of the pain being a prodromal symptom of ophthalmic shingles. A few days will suffice to clear up the diagnosis.

Discomfort about the eye with a feeling of gravel or grit in it, sometimes described as a burning sensation getting worse in artificial light, indicates conjunctivitis, usually of a mild type. One of the commonest errors in my experience is the failure to recognise the condition known as spasmodic entropion. This occurs in elderly patients; the lashes of the lower lids roll in—do not grow in—and keep up a constant irritation of the lower part of the conjunctiva of the globe. The resultant conjunctivitis may be recognised and treated, but the cause is often overlooked.

Pain referred to the back of the eyes coming on *at once* when any close work such as reading or sewing is attempted may be a very troublesome symptom. It naturally suggests an error of refraction, or some want of muscle balance. Frequently in these patients the eyes are normal in all respects, and even if there be a little hypermetropia this would not account for the pain coming on at once and being referred to the back of the eyes. You are probably all familiar with these cases. Life is spoilt by the inability to use the eyes—all kinds of glasses are tried without avail—one person is consulted after the other. What, then, does this symptom indicate? The condition is one of local neurasthenia, an example of anxiety neurosis, and cannot be cured by any deliberate action of the will. The pain and disability persist until the attention becomes focused elsewhere; all the symptoms may vanish if a simple appendix operation be performed or the tonsils be enucleated.

HEADACHE.

Pain naturally leads to the consideration of headache. It is very easy to jump to the conclusion that a headache is due to an error of refraction and *to neglect to search for some other possible cause.* Before accepting the diagnosis of the ocular origin for a headache two conditions should be fulfilled. In the first place it is not every error of refraction that is likely to cause headache; simple myopia, for example, may cause aching eyes, but not a headache. Hypermetropia and astigmatism, especially of *low* degree, are *the particular errors most* prone to cause headache.

Secondly, headache of ocular origin should have the following characteristics:—

1. *Age.*—Ocular headaches are common in school life and up to middle age, but it is usually a mistake to attribute headache in a patient over 50 to eye-strain.

2. *Site: Usually Frontal or Supraorbital.*—Many patients quite definitely put their thumb and index finger on the mid-orbital points to indicate the seat of pain. Another common situation is at the back of the neck where it joins the head. On the other hand, headache referred to the vertex should not, I think, be attributed to an error of refraction.

3. *Periodicity.*—It frequently occurs on waking—gets better or even disappears after breakfast, returns as the day draws to a close, especially if the eyes are used for close work, but does not interfere with sleep.

It is perhaps worth while to spend a few minutes in explaining the morning headache of eye-strain, as the fact of waking with a headache after a night's rest is often thought to exclude the eyes as the cause of the headache. Ocular headache is due to excessive accommodation necessitated by the hypermetropic refraction. The accommodation is, of course, relaxed during sleep, but the actual act of waking necessitates an effort of accommodation on some very near object—the bed, the room—and later for shaving or doing the hair; and it is this sudden effort of accommodation that starts the headache. It follows from this that people who suffer in this way should get relief by putting on their glasses the moment they awake, and this is usually found to be the case.

Migraine.—True migraine is preceded by subjective visual sensations, sudden attacks of half-vision—fortification spectra, zig-zags, and so on—which the patient naturally enough attributes to the eyes. Children may be shy of telling their experiences. In some cases the aura is the sole phenomenon, no headache following. The significance of migraine is *that although the symptoms* are strikingly ocular in character it is the central nervous system which is at fault. It is maintained by some authorities that migraine can be cured by correcting the error of refraction. This is not my experience. Such errors should be corrected, but the treatment should not end there.

COMMON SUBJECTIVE SENSATIONS.

I would now draw attention to certain subjective sensations which are common and often give rise to much worry.

Floating Specks.—In the vast majority of cases these muscæ volitantes do not indicate any organic disease, the important point is to find out if the specks seen by the patient stand still or move when steadfastly looked at. The average patient is, of course, not a good observer. He probably replies: "Oh, they move with my eye." Get him to try to look at them. Muscæ always move—will not, as it were, stand being looked at. If there is the slightest doubt as to whether they move or not, a thorough ophthalmoscopic examination with the pupil dilated is necessary to clear up the diagnosis. Some people, usually those who are not very busy, are much worried by these muscæ, simply live round them, draw them at different times of the day, and are extraordinarily difficult to help. I think the first step is to make a thorough ophthalmoscopic examination and if the media are clear to assure them that the symptom is not a serious one, and try to persuade them to give up looking for the specks.

Seeing coloured rings round light—the light, for example, resulting from a struck match is often the occasion of the observation. This may be a trivial symptom or one of grave significance. It may merely indicate a watery eye, or simple conjunctivitis, or be a symptom of glaucoma. The production of the rainbow colours is in the former case due to a drop of water sticking on the cornea, in the latter to fluid imprisoned in the cornea, the result of the increase of tension. Careful examination should make it easy to differentiate between the two conditions. If there be no conjunctival discharge, no watery eye, coloured rings indicate glaucoma. Further examination will reveal increase of tension, haziness of cornea, &c.

Flashes of light—specially obvious in the dark—is not an uncommon symptom and may be due to several causes. In investigating it, first make sure that the patient is not describing the aura of migraine. The cause of the flash is some mechanical stimulation of the retina, so the symptom is always serious. If it occurs in a short-sighted individual, the chances are that a detachment of the retina is imminent, or is actually taking place, and a timely rest may prevent the occurrence of the detachment, and similarly the persistence of recurring flashes of light after a knock on the eye-ball, as from a tennis-ball, or the like, calls for careful examination and the need for physical rest. Apart from their occurrence in short-sighted eyes, flashes of light may be due to that very insidious disease, cyclitis—the inflammation in the ciliary body causing a minute pull on the front part of the retina. Therefore, the significance of flashes of light associated with misty vision is that the eye is probably the seat of cyclitis. Clearly the patient who experiences these flashes requires a very thorough examination of the eye; it is not a symptom to be regarded as trivial.

Dislike to light is more frequent than the preceding. This has a very varying significance. All are familiar with the intense photophobia and secondary spasm in the orbicularis that result from a corneal ulcer in a child, the spasm being more marked the more superficial the ulcer. It is always worth while in these cases to give a general anæsthetic, otherwise the force required to separate the lids to examine the cornea may do considerable harm. This may seem a too drastic procedure. But it is the only way to examine the eye thoroughly, and the anæsthesia is also useful for purposes of treatment. Short of this severe type, quite a number of people complain of inability to stand strong sunlight. Some of these will be found to have a fair complexion, fair hair, and more or less deficiency in the choroidal pigment, as seen by the ophthalmoscope. Frequently, too, they will be found to have a northern ancestry. It is this defect in the choroidal pigment that causes the dislike to light. It is important in considering this class of case to remember that the fair hair may become darker with advancing age, the pigmentation of the choroid, however, remaining deficient.

It is not always easy, but is sometimes very important, to distinguish this group from another group in which the symptoms are similar but are an expression of a neurasthenic condition—that is to say, people with a normally pigmented choroid and normal eyes may complain that they cannot stand bright sunlight or artificial light. It is very tempting to give these people tinted glasses. This, really, is the worse course to adopt, as they invariably require them darker and darker. They should be warned about this, and advised only to wear the tinted glasses on a very bright day.

Night-blindness usually indicates impaired nutrition or actual destruction of the retinal elements. It is a symptom of retinitis pigmentosa; it occurs also in syphilitic retinitis. In another group it is due to some general nutritional disorder, absence of fresh vegetables or vitamins, and these cases may be associated with a peculiar dry condition of the bulbar conjunctivæ. It is a well-marked symptom of scurvy, and was a familiar symptom when that disease was common. The symptom also occurs without any obvious retinal lesion as a congenital or familial disease. In this group the symptoms persist throughout life, but vision is not impaired. In the retinitis pigmentosa cases, vision slowly deteriorates and blindness ultimately results. In the war night-blindness was frequently complained of without any physical cause being discovered—a form of anxiety neurosis—the cause of which it is quite easy to understand. A form of night-blindness is experienced by very long-sighted people who wear strong convex glasses in the day-time with comfort but find they cannot see with them out of doors after dark. They should be advised to dispense with the glasses when out at night.

Seeing worse in a bright light is rather a striking and unexpected symptom, as it sounds odd to see better when the light is dull. It occurs usually after 45, and suggests tobacco neuritis or early optic atrophy, the strong light quickly fatigues the already exhausted nerve. In another and, perhaps, more common group, at any rate in private practice, the symptom is due to a small well-defined opacity in the lens, in the line of vision, usually at the posterior pole. Under the action of strong light the pupil contracts and the opacity then practically fills the pupillary area. The patient with such cataract will say that he cannot see anything on entering a room when he has to face the light, and his vision in the dark may suddenly turn to temporary blindness when he faces the headlights of a motor.

Colour-blindness is usually a congenital symptom. Acquired colour-blindness is a symptom of importance. It may be the earliest symptom of optic atrophy* or tobacco neuritis. Obviously an individual's habits or occupation will largely be responsible for the early recognition of this symptom. Artists, who are often great smokers, will notice it early, as will also gardeners or anyone who has to match colours.

Red vision occurs in two quite different conditions—in young school-children, and adults after a cataract has been extracted and cataract glasses have been worn. The child says the printed page suddenly looks red—the cataract patient finds the road, or sky, or trees looking red. Probably the explanation of the symptom is the same in both cases, the retinal vessels being situated in the anterior layers of the retina are traversed by the light on its way to the rods and cones. The eye is normally adapted for this red tinge, but if the vessels are congested, as they may be, from hypermetropia, or from too much light getting in the eye, in the absence of the lens the adaptation fails. The symptom is not serious and the treatment obvious. The cataract patient should avoid strong glare and use tinted glasses—the child should have the error of refraction corrected.

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* Possibly indicating tabes.

SYMPTOMS DUE TO REFRACTIVE ERRORS AND DEFECTS OF ACCOMMODATION.

The significance of the usual symptoms due to an error of refraction or defect in accommodation are sufficiently obvious and need not detain us, but there are some that are worth mentioning. Uncorrected long sight, in addition to producing the characteristic headache already referred to, is a common cause of head-tiredness and general fatigue, and may be a factor in causing irritability of temper. The point to remember is, that these persons do not complain of their sight, they see perfectly well, but examination shows their good vision is purchased by an abnormal effort of accommodation, and so it comes about that any depression of general health—for example, after influenza, or childbirth—brings these symptoms out and the temporary use of glasses may save much discomfort. I am often told that the patient has been advised to postpone having his eyes seen to until he is stronger. This is a fallacy. Glasses, by obviating the need for the constant effort of accommodation, help these debilitated people to recover more quickly. Similarly, children at the end of term complain in this way and are all right in the holidays.

The other point worth noting is that the defect of accommodation due to age (presbyopia) under average conditions begins at 45, and by 60 all accommodative power is lost. This means that reading glasses suitable for 60 should be suitable for the rest of life. Hence, when people over 60 begin to grumble at their glasses and demand stronger ones, the complaint is significant of some organic change in the eye, most likely early cataract, possibly senile choroiditis. The enterprising optician will supply the stronger glasses, and they may be of temporary benefit, but this course is not advisable until the fundus has been examined.

People about the age of 45 to 50 sometimes complain of an inability or difficulty in opening the eyes in the morning, not due to the lids being stuck together by discharge, they generally add that they have to lift the lids up with the fingers. This symptom, which may be called "*morning ptosis*," though sometimes due to ill-health, is frequently associated with uncorrected or insufficiently corrected presbyopia, and will disappear when proper glasses for close work are worn.

DOUBLE VISION AND MULTIPLE VISION.

Double vision should always be regarded as serious unless it be confined to one eye, a fact which should always be ascertained. It means something wrong with one or more of the muscles governing the eye movements and may indicate the beginning of serious disease of the central nervous system. A temporary form of double vision occurs sometimes after the eyes have been used for close work. It is not serious; indicates either the need for glasses or fresh glasses, and probably that the individual has been looking too close at the book or work, thereby producing over-convergence.

Multiple vision—for example, seeing three or more edges to the crescent moon or multiple lights when a single one is looked at—always signifies some early change in the lens. In this connexion there should be noted another symptom sometimes called "second sight." A person over 50 discovers that whereas he has hitherto had to use glasses for reading he can now do without them. This symptom is not so satisfactory as it seems. It means that some organic change is taking place in the lens, altering its refractive index. This change may or may not be visible with the ophthalmoscope. It may be due to glycosuria, and in any case of this kind the urine should be examined for sugar. If sugar be present the so-called second sight will be found to vary with the amount of sugar present at any particular time—that is to say, the ability to read without glasses will depend on the amount of sugar present. When sugar-free the patient needs his old glasses for near work. If he becomes careless about his diet the blood-sugar increases, the refractive index of the lens changes, and he can now read without glasses. Therefore, if an elderly patient complains that some days he is short-sighted and on other days he can see quite well at a distance, he is almost certainly the subject of glycosuria.

Closing one eye to read may indicate disease of that eye, but quite frequently is due to weakness of the power of convergence, a common condition in elderly people. The patient, knowing nothing of the real reason for his closing one eye, naturally concludes that that eye is the bad one and complains that he cannot see with it. As a matter of fact, he can see quite well with either eye separately, but not with the two together.

NYSTAGMUS, VERTIGO, AND VOMITING.

A rare symptom to be mentioned spontaneously by the patient is that fixed objects when looked at appear to move or to be unsteady. This is due to nystagmus, it indicates that it is of recent origin; congenital nystagmus never produces this effect.

Vertigo may be, but only rarely is, due to defect in muscle balance, either a definite squint of recent paralytic origin, or one which, *up to the present*, has been rendered latent by an unconscious effort of compensation, but which now has become obvious owing to some weakness or debility making such compensation impossible. A vertical deviation is more prone to produce giddiness than is a lateral one. A simple test for ocular vertigo is to note if the giddiness disappears when one eye is shut. If it does, it clearly is due to some defect in binocular vision. Much can be done in some cases of ocular vertigo by the use of prismatic glasses.

I have not yet mentioned what is perhaps the commonest of eye symptoms. We often hear a patient complain of *his eye being weak*. The use of this term generally indicates an absence of clear thinking or accurate observation and an attempt should be made to ascertain what the patient really means. One will mean a watery eye, another that he cannot see small print, yet another that he cannot stand strong light.

Vomiting, I suggest, should be included as an ocular symptom. I have known more than one case of glaucoma in which vomiting, not failure of sight, was the symptom which made the patient seek advice. Vomiting may be due also to the use of too strong eserine drops, and may accompany, or perhaps mask, some injury to the eye. Although strictly speaking not an ocular symptom, it is worth noting that the use of atropine or hyoscine drops may in susceptible subjects produce the symptoms of general poisoning, giddiness, restlessness, and even delirium; to prevent or diminish the risk of such occurrence drops should be instilled at the outer canthus and not over the lacrymal punctum.

PAPILLITIS.

Before concluding, I should draw your attention to what may seem an omission. You may have noticed that no mention has been made of papillitis (optic neuritis). Papillitis due, for example, to a tumour of the brain or to some toxæmic condition—renal disease or pregnancy—may exist for a considerable time without producing any effect on vision. Occasionally it may give rise to a *temporary* loss of vision, noticed, perhaps, on waking or on going from a well-lighted room to a darker one. The loss of vision may be so slight and temporary as not to call for much notice. The significance of these facts is obvious. The fundus should be examined in all cases of persistent headache, especially if it be of a severe character, even though there be no complaint of loss of vision. And similarly, if this apparently trivial symptom—temporary obscuration of vision—occur in the course of pregnancy associated with albuminuria, an examination of the fundus should be made at once. A timely termination of the pregnancy may prevent permanent loss of sight.

MINERS' NYSTAGMUS.[1]

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THE subject of miners' nystagmus has become one of considerable urgency on account of the numbers of men who are affected. It involves for them a period of bad health, sometimes of considerable duration and severity, and in addition there is an ever-increasing charge upon one of the most important industries of the country.

In the last few years the disease seems to have become much more prevalent than it was in my own student days. At the eye clinic in Glasgow, a town situated on the margin of the coal-fields of Lanarkshire and Dumbartonshire, a case of miners' nystagmus was occasionally seen, but very rarely. At that time there was no record kept by the State of the incidence of the disease. It was not within the province of any certifying surgeon. There was no miners' compensation, and therefore the State took no formal notice of its incidence. Accurate statistics have only been obtained within the last few years, and it is perhaps too soon to say whether the disease is definitely increasing or diminishing. Some time ago I communicated with the Ministry of Mines to know if the facts of the incidence of the disease had in any way been submitted to epidemiologists, and if any researches had been made as to the pathology of the malady, and I was told that no investigations in the latter direction had yet been carried out.

In this communication I desire to say something as to (*a*) the ætiology of the disease, (*b*) the management of patients afflicted with it, and (*c*) the legal aspects of the question.

Ætiology of the Disease.

Now, as regards the ætiology, there has been much excellent research work of a painstaking kind by numerous investigators in this and other countries. Great credit is due to many people, but particularly mention ought, I feel, to be made of the work of the late Mr. Simeon Snell, of Mr. Llewellyn, and more recently of Mr. Robson, so far as the United Kingdom is concerned. We have also had two Government reports on the subject, but I do not think that we have yet arrived at any certainty as to the causation of this malady. The origin of the disease has been attributed to such incidents in a collier's life as deficient illumination, constrained and cramped postures in working, inhalation of gases from certain kinds of coal. There can be no question as to the great merit of the work that has been done by numerous investigators, but, all the same, I fear that the verdict must be one of not proven.

To begin with, the connexion of miners' nystagmus with coal-mining is by no means a constant one. We have whole areas in which no cases seem to occur. It is very common in certain districts in the United Kingdom, very infrequent in others. It is common in some coal-fields on the continent, but is said to be unknown in the coal-pits of the United States and of South Africa. Now, in these areas there is no doubt that the miners work in cramped and strained positions. The illumination, of course, must be artificial, and presumably the chemical composition of coal, and therefore of the gases given off while it is being mined, is not very widely different in the different countries of the world. I have lately seen a case in which a miner had miners' nystagmus in Scotland. He went to the United States and worked there for some years, during which time he was quite free of the disease. On returning to Scotland and resuming work in the mine he was again attacked.

One remark must be made as to the change from what is known as the Glennie lamp to electric light. In my work as a medical referee I have frequently come across cases in which the sufferer from miners' nystagmus has definitely told me that the introduction of electric light was the first thing that made him give up working below ground. Up till the time of its introduction he had been able to work in comparative comfort with the ordinary Glennie lamp, but directly the electric light was introduced the glare made it quite impossible for him to continue at his occupation. That is a statement that I have very frequently received from colliers while examining them as a medical referee. To some extent the brilliant electric light seems to act as a detector of the presence of the disease. I am aware that it is maintained by trustworthy observers that the introduction of electric light has caused a diminution in the percentage of persons affected. I have no doubt as to the reliability and impartiality of the statements made, but I should be very glad to have accurate figures for the whole of the United Kingdom. I am not satisfied that all the painstaking work that has been done has solved the riddle, and therefore I have ventured to suggest that other lines of investigation, followed by persons who are competent for the work, might be of material assistance.

Symptoms.

My first proposition is that the disease is not one affecting the eyes alone, but that there are evidences of a more general involvement of cerebral centres. Everybody admits the characteristic movements of the eyes. Most people also know that there is a considerable amount of pain in the head. In my experience the pain is chiefly felt in the temples and forehead and in the occipital region. There are vertigo, muscular tremors, photophobia, night-blindness, and, in certain cases, special attitudes of the head; these are the usual symptoms with which everybody is familiar. There are other conditions which seem to me not to have received the attention which perhaps they should have received—namely, diminution of visual acuteness (in the proper sense of the term), and disturbances of the circulation. I almost invariably find the pulse rapid and weak and very frequently intermittent in rhythm. Such symptoms do not depend upon eye-strain. I can scarcely bring myself to believe that they depend upon illumination. It is perhaps conceivable that they may be associated with the long continuance of strained positions of the body, and I think they might also be associated with chronic poisoning by those gases on the action of which Mr. Robson, in his excellent monograph, lays stress, or by some other emanations of which we know nothing. It is because of this widespread involvement of nerve centres that it has seemed to me a possible explanation may be the presence of some micro-organism hitherto not discovered.

In May, 1924, as I have said, I wrote to the Mines Department, and learned that no investigations into the pathological conditions in persons suffering from miners' nystagmus had been made. I must say, considering the immense importance of the disease, alike to the sufferer and to the economic condition of the United Kingdom, I think it is high time that such investigations were made. No stone should be left unturned. The disease, so far as I know, is never fatal, but still post-mortem investigations might be made on persons who during life were known to have had it, and also there is no reason why, during the attacks, the condition of the cerebro-spinal fluid and of the blood should not be made the subject of investigation.

Diminished Visual Acuteness.

In a communication to the Ophthalmological Section of the Royal Society of Medicine,[2] I ventured to say that one of the most frequent symptoms was *diminution of visual acuteness*. Since that paper was given I have seen a very considerable number of patients, and I find the statement to be true. I am glad to be able to say that Mr. Llewellyn, in his able article in the *British Journal of Ophthalmology* for 1920, also mentions diminished visual acuity. I feel inclined to ascribe this defective visual acuteness to a central defect, and not merely to the oscillatory movements of the eyeballs. The visual acuteness remains defective even when the eyeballs are at rest between the paroxysms. I wish particularly to emphasise the fact that I use the word *visual acuteness* in the strict sense in which it ought always to be used. Visual acuteness is a matter almost entirely of macular function. At the conclusion of my communication, one of the gentlemen who took part in the discussion said that the vision in miners' nystagmus was not always bad, for he knew of a man with miners' nystagmus who could play a game of golf. That game does not require visual acuteness in the strict sense of the term, but only field vision. I have a near relative who has very defective central vision in each eye, who can only read with the aid of a strong magnifying glass and who has had on account of defective sight to study Braille, but who can fly-fish with some degree of success for trout and salmon. He can see the swirl of the water in the pool, he can see where the cast strikes the water, but he is quite unable to see the individual flies.

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[1] A paper read before the Glasgow Royal Medico-Chirurgical Society on May 1st, 1925.

[2] Proceedings of the Royal Society of Medicine, vol. xvii.

One other observation in this connexion seems to me to be of importance. Coal-mining does not require visual acuteness at all, at any rate in the sense in which I use that phrase. At the Toronto meeting of the British Medical Association and on various other occasions I have called attention to cases which I have seen of patients who had 10 diopters or more of myopia and who still had no difficulty in coal-mining. Suppose we take 10 diopters—and I have known miners with a considerably higher amount—the distant point of distinct vision is at 4 inches from their eyes. I would expect a person with that amount of myopia, provided the eyes are healthy, to read small type at a distance of approximately 4 inches from the eyes but not at a greater. At the same time, while so employed, he can quite well, with his peripheral vision, make himself aware of the various objects in the room. It is this field vision which is used for coal-mining and for almost every other form of manual work. To attempt to express capacity for manual work or even for navigation in terms of visual acuteness is to attempt the impossible. I myself have a visual acuteness without my lenses of 6/36 in each eye but not more, yet, as a matter of fact, I can pick up a buoy quite easily at a distance of two or even more miles, and, when looking at the test-types from a distance of six metres without my glasses, I can locate quite distinctly the line of letters corresponding to the distance of three metres, although I cannot read them. I have no difficulty whatever in seeing that there are black marks on the card at that distance, and were these an object to be avoided I would have no difficulty in doing so. It is this function that is used in almost every kind of manual work, coal-mining included. For that reason I beg most respectfully to differ from Sir J. Purves-Stewart in his well-known and admirable text-book on "*Nervous Diseases*." He seems to base his theory of the oscillations of miners' nystagmus on the idea that coal-mining depends upon visual acuteness. It does not; it depends upon the more general function which we may call field vision. Visual acuteness I define as a function almost entirely macular, and it is that function which we investigate when we estimate the punctum remotum and the punctum proximum of vision by the use of test-types. The other functions of vision I think should be called field vision, and it is on this field vision that a labourer or a collier depends for his work.

A somewhat similar error was made by an ingenious member of our profession who, some years ago, with a view to testing the visual acuteness of young children, caused to be made certain sizes of white ivory balls, throwing them on the floor to see if the child could pick them up. That was not a test of visual acuteness. It may have been a test of differences of light perception or even of colour perception, but one thing it certainly was not, and that is a test of visual acuteness.

Circulatory Disturbance.

In the next place I want to say that in miners' nystagmus the pulse-rate is often very high. I think that from observed cases I have been justified in forming the opinion that the pulse-rate varies very much with the intensity of the disease. Very frequently I find it 100 or even more than 100. In one or two cases it has been as much as 120. I have only twice got a case, since I began these observations, under 76. The pulse is generally taken before the examination commences and after it is finished, and frequently the pulse is found to be a little slower, although not materially, at the end of the examination. Furthermore, it is often very weak in character and not infrequently it is intermittent in beat. That also I think clearly points to the fact that miners' nystagmus is something more than a disease of the eye.

Paroxysmal Nature of the Attacks.

But another striking feature in many cases is that the attacks of giddiness and of pain, and even of the movements of the eyeballs, are paroxysmal. A patient feels extremely well and goes about quite freely till all of a sudden he takes an attack of acute pain in the head with giddiness. Such attacks are apt to come on when the patient makes any effort at stooping or when he makes much exertion. To this I shall return when I come to speak of the treatment of miners' nystagmus. These three features, the diminution, in the large bulk of cases, of the visual acuteness, the disturbances of the circulation, and the paroxysmal nature of the attacks, seem to me to make it impossible to regard this disease as purely ocular in origin. It is not; it is a much more general condition affecting a large number of centres.

Now I think it quite possible that it may be due to the inhalation of certain gases or other emanations, but I have some difficulty in accepting this view. As has already been pointed out, there are huge areas where the disease does not exist. Further, I doubt very much if we would get the paroxysmal features in the attacks if the cause be gas inhalation. I wish plainly to say that I will not deny the possibility of its being due to the inhalation of deleterious gases, but I do say this, that there is a large field of investigation which does not yet seem to have been touched and which I think ought to be investigated by pathologists, bacteriologists, and epidemiologists. That seems to me a reasonable demand. From all I can hear the disease is increasing considerably in this country. Years ago there was very little of it. Were the cause either defective light or cramped position or gas inhalation it is difficult to believe that the disease would be unknown in some areas and abundant in others; nor is it likely that it would for long periods, in some cases for years, affect its victim in a paroxysmal manner.

Given a tolerable state of recovery, there may be no fresh exposure to defective light or to cramped position or to gas inhalation and yet there are fresh manifestations of the symptoms at intervals. If the disease were due to the three above-mentioned conditions then the number of cases occurring each year should be approximately a constant.

That this is far from being the case the undernoted figures show. These give the numbers of persons receiving compensation for miners' nystagmus in the United Kingdom for the years mentioned.

1913	*1914*	*1919*	*1920*	*1921*	*1922*	*1923*
2401	2774	2718	2865	1913	4902	3872

In looking into the matter the question has arisen as to whether this is not a comparatively new disease. When I was a student and a junior practitioner in the Glasgow Eye Infirmary we rarely saw any cases. Dransart, one of the early writers on the subject, mentions only a few, and in his communication

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CONSULTING SURGEON, GLASGOW EYE INFIRMARY.

The subject of miners' nystagmus has become one of considerable urgency on account of the numbers of men who are affected. It involves for them a period of bad health, sometimes of considerable duration and severity, and in addition there is an ever-increasing charge upon one of the most important industries of the country.

In the last few years the disease seems to have become much more prevalent than it was in my own student days. At the eye clinic in Glasgow, a town situated on the margin of the coal-fields of Lanarkshire and Dumbartonshire, a case of miners' nystagmus was occasionally seen, but very rarely. At that time there was no record kept by the State of the incidence of the disease. It was not within the province of any certifying surgeon. There was no miners' compensation, and therefore the State took no formal notice of its incidence. Accurate statistics have only been obtained within the last few years, and it is perhaps too soon to say whether the disease is definitely increasing or diminishing. Some time ago I communicated with the Ministry of Mines to know if the facts of the incidence of the disease had in any way been submitted to epidemiologists, and if any researches had been made as to the pathology of the malady, and I was told that no investigations in the latter direction had yet been carried out.

In this communication I desire to say something as to (a) the ætiology of the disease, (b) the management of patients afflicted with it, and (c) the legal aspects of the question.

Ætiology of the Disease.

Now, as regards the ætiology, there has been much excellent research work of a painstaking kind by numerous investigators in this and other countries. Great credit is due to many people, but particularly mention ought, I feel, to be made of the work of the late Mr. Simeon Snell, of Mr. Llewellyn, and more recently of Mr. Robson, so far as the United Kingdom is concerned. We have also had two Government reports on the subject, but I do not think that we have yet arrived at any certainty as to the causation of this malady. The origin of the disease has been attributed to such incidents in a collier's life as deficient illumination, constrained and cramped postures in working, inhalation of gases from certain kinds of coal. There can be no question as to the great merit of the work that has been done by numerous investigators, but, all the same, I fear that the verdict must be one of not proven.

To begin with, the connexion of miners' nystagmus with coal-mining is by no means a constant one. We have whole areas in which no cases seem to occur. It is very common in certain districts in the United Kingdom, very infrequent in others. It is common in some coal-fields on the continent, but is said to be unknown in the coal-pits of the United States and of South Africa. Now, in these areas there is no doubt that the miners work in cramped and strained positions. The illumination, of course, must be artificial, and presumably the chemical composition of coal, and therefore of the gases given off while it is being mined, is not very widely different in the different countries of the world. I have lately seen a case in which a miner had miners' nystagmus in Scotland. He went to the United States and worked there for some years, during which time he was quite free of the disease. On returning to Scotland and resuming work in the mine he was again attacked.

One remark must be made as to the change from what is known as the Glennie lamp to electric light. In my work as a medical referee I have frequently come across cases in which the sufferer from miners' nystagmus has definitely told me that the introduction of electric light was the first thing that made him give up working below ground. Up till the time of its introduction he had been able to work in comparative comfort with the ordinary Glennie lamp, but directly the electric light was introduced the glare made it quite impossible for him to continue at his occupation. That is a statement that I have very frequently received from colliers while examining them as a medical referee. To some extent the brilliant electric light seems to act as a detector of the presence of the disease. I am aware that it is maintained by trustworthy observers that the introduction of electric light has caused a diminution in the percentage of persons affected. I have no doubt as to the reliability and impartiality of the statements made, but I should be very glad to have accurate figures for the whole of the United Kingdom. I am not satisfied that all the painstaking work that has been done has solved the riddle, and therefore I have ventured to suggest that other lines of investigation, followed by persons who are competent for the work, might be of material assistance.

Symptoms.

My first proposition is that the disease is not one affecting the eyes alone, but that there are evidences of a more general involvement of cerebral centres. Everybody admits the characteristic movements of the eyes. Most people also know that there is a considerable amount of pain in the head. In my experience the pain is chiefly felt in the temples and forehead and in the occipital region. There are vertigo, muscular tremors, photophobia, night-blindness, and, in certain cases, special attitudes of the head; these are the usual symptoms with which everybody is familiar. There are other conditions which seem to me not to have received the attention which perhaps they should have received—namely, diminution of visual acuteness (in the proper sense of the term), and disturbances of the circulation. I almost invariably find the pulse rapid and weak and very frequently intermittent in rhythm. Such symptoms do not depend upon eye-strain. I can scarcely bring myself to believe that they depend upon illumination. It is perhaps conceivable that they may be associated with the long continuance of strained positions of the body, and I think they might also be associated with chronic poisoning by those gases on the action of which Mr. Robson, in his excellent monograph, lays stress, or by some other emanations of which we know nothing. It is because of this widespread involvement of nerve centres that it has seemed to me a possible explanation may be the presence of some micro-organism hitherto not discovered.

In May, 1924, as I have said, I wrote to the Mines Department, and learned that no investigations into the pathological conditions in persons suffering from miners' nystagmus had been made. I must say, considering the immense importance of the disease, alike to the sufferer and to the economic condition of the United Kingdom, I think it is high time that such investigations were made. No stone should be left unturned. The disease, so far as I know, is never fatal, but still post-mortem investigations might be made on persons who during life were known to have had it, and also there is no reason why, during the attacks, the condition of the cerebro-spinal fluid and of the blood should not be made the subject of investigation.

Diminished Visual Acuteness.

In a communication to the Ophthalmological Section of the Royal Society of Medicine,[2] I ventured to say that one of the most frequent symptoms was *diminution of visual acuteness.* Since that paper was given I have seen a very considerable number of patients, and I find the statement to be true. I am glad to be able to say that Mr. Llewellyn, in his able article in the *British Journal of Ophthalmology* for 1920, also mentions diminished visual acuity. I feel inclined to ascribe this defective visual acuteness to a central defect, and not merely to the oscillatory movements of the eyeballs. The visual acuteness remains defective even when the eyeballs are at rest between the paroxysms. I wish particularly to emphasise the fact that I use the word *visual acuteness* in the strict sense in which it ought always to be used. Visual acuteness is a matter almost entirely of macular function. At the conclusion of my communication, one of the gentlemen who took part in the discussion said that the vision in miners' nystagmus was not always bad, for he knew of a man with miners' nystagmus who could play a game of golf. That game does not require visual acuteness in the strict sense of the term, but only field vision. I have a near relative who has very defective central vision in each eye, who can only read with the aid of a strong magnifying glass and who has had on account of defective sight to study Braille, but who can fly-fish with some degree of success for trout and salmon. He can see the swirl of the water in the pool, he can see where the cast strikes the water, but he is quite unable to see the individual flies.

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[1] A paper read before the Glasgow Royal Medico-Chirurgical Society on May 1st, 1925.

[2] Proceedings of the Royal Society of Medicine, vol. xviii.

One other observation in this connexion seems to me to be of importance. Coal-mining does not require visual acuteness at all, at any rate in the sense in which I use that phrase. At the Toronto meeting of the British Medical Association and on various other occasions I have called attention to cases which I have seen of patients who had 10 diopters or more of myopia and who still had no difficulty in coal-mining. Suppose we take 10 diopters—and I have known miners with a considerably higher amount—the distant point of distinct vision is at 4 inches from their eyes. I would expect a person with that amount of myopia, provided the eyes are healthy, to read small type at a distance of approximately 4 inches from the eyes but not at a greater. At the same time, while so employed, he can quite well, with his peripheral vision, make himself aware of the various objects in the room. It is this field vision which is used for coal-mining and for almost every other form of manual work. To attempt to express capacity for manual work or even for navigation in terms of visual acuteness is to attempt the impossible. I myself have a visual acuteness without my lenses of 6/36 in each eye but not more, yet, as a matter of fact, I can pick up a buoy quite easily at a distance of two or even more miles, and, when looking at the test-types from a distance of six metres without my glasses, I can locate quite distinctly the line of letters corresponding to the distance of three metres, although I cannot read them. I have no difficulty whatever in seeing that there are black marks on the card at that distance, and were these an object to be avoided I would have no difficulty in doing so. It is this function that is used in almost every kind of manual work, coal-mining included. For that reason I beg most respectfully to differ from Sir J. Purves-Stewart in his well-known and admirable text-book on "Nervous Diseases." He seems to base his theory of the oscillations of miners' nystagmus on the idea that coal-mining depends upon visual acuteness. It does not; it depends upon the more general function which we may call field vision. Visual acuteness I define as a function almost entirely macular, and it is that function which we investigate when we estimate the punctum remotum and the punctum proximum of vision by the use of test-types. The other functions of vision I think should be called field vision, and it is on this field vision that a labourer or a collier depends for his work.

A somewhat similar error was made by an ingenious member of our profession who, some years ago, with a view to testing the visual acuteness of young children, caused to be made certain sizes of white ivory balls, throwing them on the floor to see if the child could pick them up. That was not a test of visual acuteness. It may have been a test of differences of light perception or even of colour perception, but one thing it certainly was not, and that is a test of visual acuteness.

Circulatory Disturbance.

In the next place I want to say that in miners' nystagmus the pulse-rate is often very high. I think that from observed cases I have been justified in forming the opinion that the pulse-rate varies very much with the intensity of the disease. Very frequently I find it 100 or even more than 100. In one or two cases it has been as much as 120. I have only twice got a case, since I began these observations, under 76. The pulse is generally taken before the examination commences and after it is finished, and frequently the pulse is found to be a little slower, although not materially, at the end of the examination. Furthermore, it is often very weak in character and not infrequently it is intermittent in beat. That also I think clearly points to the fact that miners' nystagmus is something more than a disease of the eye.

Paroxysmal Nature of the Attacks.

But another striking feature in many cases is that the attacks of giddiness and of pain, and even of the movements of the eyeballs, are paroxysmal. A patient feels extremely well and goes about quite freely till all of a sudden he takes an attack of acute pain in the head with giddiness. Such attacks are apt to come on when the patient makes any effort at stooping or when he makes much exertion. To this I shall return when I come to speak of the treatment of miners' nystagmus. These three features, the diminution, in the large bulk of cases, of the visual acuteness, the disturbances of the circulation, and the paroxysmal nature of the attacks, seem to me to make it impossible to regard this disease as purely ocular in origin. It is not; it is a much more general condition affecting a large number of centres.

Now I think it quite possible that it may be due to the inhalation of certain gases or other emanations, but I have some difficulty in accepting this view. As has already been pointed out, there are huge areas where the disease does not exist. Further, I doubt very much if we would get the paroxysmal features in the attacks if the cause be gas inhalation. I wish plainly to say that I will not deny the possibility of its being due to the inhalation of deleterious gases, but I do say this, that there is a large field of investigation which does not yet seem to have been touched and which I think ought to be investigated by pathologists, bacteriologists, and epidemiologists. That seems to me a reasonable demand. From all I can hear the disease is increasing considerably in this country. Years ago there was very little of it. Were the cause either defective light or cramped position or gas inhalation it is difficult to believe that the disease would be unknown in some areas and abundant in others; nor is it likely that it would for long periods, in some cases for years, affect its victim in a paroxysmal manner.

Given a tolerable state of recovery, there may be no fresh exposure to defective light or to cramped position or to gas inhalation and yet there are fresh manifestations of the symptoms at intervals. If the disease were due to the three above-mentioned conditions then the number of cases occurring each year should be approximately a constant.

That this is far from being the case the undernoted figures show. These give the numbers of persons receiving compensation for miners' nystagmus in the United Kingdom for the years mentioned.

1913	*1914*	*1919*	*1920*	*1921*	*1922*	*1923*
2401	2774	2718	2865	1913	4902	3872

In looking into the matter the question has arisen as to whether this is not a comparatively new disease. When I was a student and a junior practitioner in the Glasgow Eye Infirmary we rarely saw any cases. Dransart, one of the early writers on the subject, mentions only a few, and in his communication

(*Annales d'Oculist*, 1877) says that Alf. Graefe had recorded three cases and Nieden five. Charles Bell Taylor, who for many years was a well-known ophthalmic practitioner in Nottingham, in his paper (The Lancet, 1875) was only able to record three cases.

Before leaving this part of the subject there is just one other point that I wish to mention. Some patients have miners' nystagmus and suffer very little inconvenience from it. Prof. E. L. Collis (The Lancet, Feb. 28th, 1925) says that oscillation of the eyeballs is present without causing inconvenience in from 20 to 30 per cent. of miners working with poor illumination. He lays much stress on the presence of a neurasthenic element as being of great importance. He does not define what he means by a neurasthenic element and, till he does so, the phrase, though convenient, is without meaning. It seems more rational to say that the symptoms manifested in any particular case are chiefly conditioned by the centres of the brain affected by some morbid process hitherto unknown.

I cannot help thinking that the symptoms in great part point to the mid-brain and the occipital lobes as being often involved. There is also frequently pain in the temporal region of each side of the skull which is perhaps accounted for by the fact that the centres for the movements of the eyes are at the lower aspect of each anterior ascending frontal convolution.

I cannot but regard the cause of miners' nystagmus as being at present unknown. Therefore I desire, as expressed in my communication to the Royal Society of Medicine, that other lines of investigation should be followed particularly by epidemiologists, bacteriologists, and pathologists.

Treatment.

I wish very briefly to discuss the treatment of this somewhat mysterious affection. Unfortunately, as a medical referee, I only see patients at a tolerably late stage of the malady, and therefore the following remarks are not made with that fullness of knowledge of the evolution of the disease which is possessed by many colliery doctors.

The point which has given me the greatest anxiety is to determine when a man who is the subject of the disease is in a condition to resume work. So widespread is the disease that it has become a serious question in the economics of coal-mining. To some extent I have gained assistance by dividing the cases that come before me into two groups. The first contains cases in which the pulse is not rapid—i.e., not above 80 or 85 per minute; in which there is little or no pain in the head, either frontal or occipital, and in which the vision, after careful correction of errors of refraction, is something better than 6/18. Again, it may be repeated that a coal-miner does not use visual acuteness in the true sense of the term. Visual acuteness in this true sense is the function which is examined when the distances of the punctum proximum and the punctum remotum from the eye are determined by types. The coal-miner, unless he be of a scientific bent and examines the fossils which are to be found in the coal, never uses visual acuteness in coal-mining. The importance of a diminished visual acuteness is that, if my opinion be correct, it indicates the involvement of the apices of the occipital lobes in the pathological process. A miner who is a slight case as above defined is, in my opinion, fit for a certain amount of light work, probably even at a colliery. Such work, however, should not involve much stooping nor anything which demands great physical exertion. It seems to me that it is very desirable to get a man who is a light case back to some work; but at first to such work as will not entail exhaustion of nerve centres. Here we are brought up against a double difficulty: there is no definition or even understanding as to what is meant by the phrase "light work"; nor, so far as I am aware, is there any arrangement whereby a man who is recovering from miners' nystagmus can work only part of a shift. I quite agree that there is often a mental factor in the case. When this is so, then regular work of a suitable kind will help very materially in promoting restoration to health, by restoring a man's confidence in himself, by allowing him to find out that he is able for some work.

Many of my colleagues, whose opinions are worthy of all consideration, aver that miners' nystagmus is closely analogous to shell shock. While not admitting the analogy I would like to ask this question of those who hold that opinion: Were they actually treating cases of shell shock would they transport their patients to a battle-field or subject them to the roar of artillery with the view of promoting their recovery? Perhaps the law might be altered to allow a larger selection of forms of employment for such men; agricultural work might be found to be very suitable, as it is work in healthy out-of-door surroundings. In cases in which good progress has been made towards recovery then work on the surface at a colliery might be undertaken.

The object of all treatment should be to nurse the patient back to a normal state of mental and physical vigour. With that end in view, as soon as possible some work ought to be undertaken. A friendly understanding between employers and employed as to kinds of work available would be of great service and in most cases the patient himself might be consulted as to forms of work which he feels capable of undertaking.

The case is quite different when the attack is severe. Given a patient with a quick and feeble pulse, with severe attacks of giddiness, with severe pain in the head, and with a diminished visual acuteness, then I think that the patient must be considered as being seriously ill and the greatest care must be exercised in certifying that the patient is fit for work. No doubt there may be every now and again a malingerer—malingering can scarcely produce a pulse-rate of over 100 per minute—but so far as I am able to form an opinion the large majority of these patients are ill and very often severely ill. It is always to be remembered that the attacks are frequently paroxysmal, and that therefore the symptoms vary very much in intensity at different times. When a patient has unmistakably the disease in this severe form he ought not to be definitely certified as fit for work.

A man with symptoms which point to severe exhaustion or disturbance of nerve centres should, generally speaking, be given a period of rest from labour. But here a new danger arises, and it is that a man who for many years has followed an active life may, when put on the shelf, become despondent, and the mental element thus developed may interfere, and that materially, with recovery. Unless in the severest cases, patients suffering from this severe form of the disease should take a certain amount of out-of-door exercise, preferably on some country road or in the fields. So long as the disease is severe they require a guide wherever there is traffic. The presence of a guide is almost necessary, for no one can tell when the patient will have a paroxysmal attack. Even on a country road the presence of a companion is desirable, for it gives the patient a sense of safety and in addition helps to abolish the introspection which a solitary walk is apt to engender. While ample rest should be given, every effort should be made to prevent the patient moping for days or weeks together in bed. Alcohol in every form should be prohibited, and so should such a depressant as tobacco.

I think it would also be advantageous if arrangements could be made for sufferers from this disease to be under regular medical supervision. No doubt many of them are frequently seen by their panel doctors, who, in colliery districts, are very familiar with the disease in all its aspects and are well fitted to care for the patients; I desire, however, that each patient shall be visited at least once every fortnight by his panel doctor or by some reliable substitute

I do not think that at present there is any great need for special clinics for such patients.

Legal Aspect: The Question of Unfitness for Work.

In some respects I would alter legal procedure in these cases. If a man has miners' nystagmus to the extent of having to give up work, there can be no difficulty in certifying that he is unable to earn full wages at the work at which he was employed. I cannot see any alternative to the giving of such a certificate when the patient has had to leave off work. But there is no provision made, so far as I can interpret the prescribed form, to indicate that a particular case is a slight one, and that, although the patient ought not to work below ground, yet that he may be able for certain forms of light work above ground.

The present process is as follows. A patient feels difficulty in vision and he avails himself of the services of his panel doctor. The doctor in turn diagnoses nystagmus and sends him to a certifying surgeon, who examines the patient carefully and grants a certificate to the effect that the patient is suffering from miners' nystagmus; he also fixes the date when the incapacity began. Frequently an appeal is made from the certifying surgeon to the medical referee. This involves a third examination of the patient and not infrequently a journey of a good number of miles. The medical referee is always provided with a copy of the original report by the certifying surgeon from which he gains some useful information as to the condition of the nystagmus at the date when the certificate was granted. Perhaps the chief advantage in having a second opinion is that occasionally a miner may have a nystagmus which is not miners' nystagmus. The present writer has seen a case in which a miner had nystagmus but at the same time had disseminated sclerosis. Further, an experienced ophthalmic surgeon can examine eyes on many points—e.g., as to refraction and as to the presence or absence of heterophoria.

There is a good deal to be said against an appeal from one individual to another, and there is a somewhat widely spread feeling that the appeal should be to a panel of three. There is much to recommend this suggestion; it would, however, enormously increase the cost. Perhaps a simpler, less expensive, and equally satisfactory way would be for the certifying surgeon—whose certificate has been impugned—and a doctor selected by the employers to examine the workman together and draw up a joint report. In the event of their not coming to an agreement as to the facts, then and then only would the medical referee be called upon to act.

When an agreement as to the facts has been arrived at either with or without the aid of the medical referee, then the agreement should hold good for at least six months, during which time the patient should be exempt from further medical examinations.

When the patient has recovered to the extent of being able for something then he should begin with some light work for a few hours daily; to a large extent he should be allowed to choose the nature of the work, and it ought not necessarily to be at a colliery. My own preference would be for light agricultural work. I would hesitate long before I certified a patient with a pulse-rate of anything between 90 and 120 as fit for any work which would require either much stooping or such strong muscular effort as would exhaust the nerve centres.

Not long ago a judge had before him the case of a workman who was supposed, after a serious eye condition, to be doing light work as a watchman. It transpired that he went on duty every winter afternoon at 4.30 and was not relieved till 7.30 the following morning. There was a special dispensation at the end of each week—he went on duty at 4.30 on Saturday night and was not relieved till 7.30 on the following Monday morning. I do not know what the learned judge's decision was, but he and myself as assessor were of opinion that some people have queer notions of what is meant by light work.

Miners' Nystagmus in America.

Since drafting the above paper I have received some communications from America that seem to me of great interest. While making myself acquainted with the European literature on miners' nystagmus, I thought it right also to communicate with a few friends on the other side of the Atlantic. I wrote to Prof. McCallum, the well-known biochemist in Montreal. He has, with great kindness, promised to communicate with persons connected with the coal industry in Canada, but as yet he is not in a position to give me any report on the matter. I also communicated with Dr. Duane, of New York, and with Dr. Webster Fox, of Philadelphia. Dr. Duane, in acknowledging receipt of my letter wrote, on April 10th of this year, as follows: "Miners' nystagmus is certainly rare in this country, as is shown by the total, or practically total, absence of reference to it in our literature. Apparently even in the coal-fields of Pennsylvania, where one would expect it, it is rare. I myself have never seen a case that I can recollect." Dr. Duane has very kindly promised to get me further information and is, I believe, having investigations made as to the conditions in the Pittsburg coal-pits.

I am deeply indebted to Dr. Webster Fox for kindly forwarding to me some literature published in America. He has sent to me four numbers of the Monthly Review of the U.S. Bureau of Labor Statistics, and, in addition, he has sent a very interesting paper entitled Miners' Nystagmus, by Frederick L. Hoffman, printed by the Government Printing Office, Washington, in 1916. This particular publication is one of great value. It is a very full and painstaking discussion of the whole subject, and the bibliographical references are of great importance because they are very full. I do not think I have seen a better synopsis of the history of miners' nystagmus than is contained in this publication. The author mentions, amongst other things, all the important work that has been done in Europe, giving full details of the very painstaking and elaborate researches of Llewellyn and Snell and Nieden, and of a considerable number of other Europeans who have written on the subject. What strikes me in these contributions coming from the United States, is that they all deal with European nystagmus, and the disease is almost never mentioned as occurring in the United States. So far as the information derived from the literature which I have perused throws any light on the subject, it is a disease practically unknown in America. There is one statistical investigation mentioned as having been conducted in Illinois. Five hundred miners working under conditions which would render them liable to nystagmus in this country were carefully examined and not a single case of miners' nystagmus found.

Hoffman, in his summary at the end of his contribution, has this important sentence: "No reasons suggest themselves, however, why this peculiar affliction should be limited to mining districts of European countries and not be found in American coal-mining districts, where, on account of the gaseous nature of the mines, the use of safety-lamps is compulsory." This sentence throws grave doubts on any theory of defective illumination being the cause. If safety-lamps produce nystagmus in the United Kingdom why do they not do so in the United States? Why have the hopes that electric lighting of coal-pits would abolish nystagmus not been fulfilled? If the inhalation of gas be the cause in South Wales and elsewhere why do the gaseous conditions of the pits in America not produce similar results?

THE TREATMENT OF GENERAL PARALYSIS AND TABES BY TRYPARSAMIDE.

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REMARKABLE results have been published in America from the use in syphilis of the nervous system of a new arsenical compound, tryparsamide, supplied by the Rockefeller Institute. This drug, which is a sodium salt of N-phenyl-glycineamid-p-arsenic acid (containing 25·0 per cent. of arsenic), was first prepared by Jacobs and Heidelberger in 1915. Experiments have shown that it has peculiar properties. Its spirochæticidal action is relatively feeble, but it has a marked tonic effect, it promotes recovery from toxic injury, and induces the healing of syphilitic lesions without increasing the liability to a generalised spread of the spirochæte. At the same time it has very little local or general irritant action upon the tissues, and cumulative effects are infrequent. Moreover, experiments indicate that it has a greater power of penetrating into the cerebro-spinal fluid than other arsenical preparations. The drug appears to be of value also in both human and animal trypanosomiasis. The sole disadvantage is a tendency to cause amblyopia which is usually transitory, but may rarely be permanent.

Through the kindness of Sir Frederick Mott a supply of tryparsamide from the Rockefeller Institute became available early last year at the Maudsley Hospital for the treatment of suitable cases of general paralysis and tabes. The number of cases treated up to date is, unfortunately, small, but it has been thought worth while to publish these results, a preliminary report upon which has already been laid before the Medical Research Council.

Type of Case under Treatment.

The cases were obtained from various sources. Some were referred by general practitioners or from other hospitals and infirmaries specially for this treatment, while others attended the out-patient department for the relief of symptoms which investigation proved to be due to neuro-syphilis. As this hospital is intended for early forms of mental disorder, and as all patients before admission must be capable of signifying their desire to undergo treatment, the cases in the present series were, for the most part, early, and the mental symptoms on admission comparatively mild. As will be seen, some had later to be sent elsewhere for detention under certificate. Beyond the fact, then, that the mental symptoms on admission were not so severe as to render removal to an asylum imperative, the cases were not specially selected. They are, on the whole, comparable to those reported by Lorenz, Loevenhart, Bleckwenn, and Hodges.[1] To quote these observers:—

> "In our work we include under paresis any case of syphilis of the central nervous system that has a certain physical symptom-complex and which is associated with definite mental symptoms of sufficient severity to warrant the conclusion that a psychosis exists. This psychosis may be varied in its symptoms; most common is a general dilapidation shown by a lessened interest and capability with a proneness to confusion and faulty memory for recent events associated with an emotional instability bordering on a child-like happiness or simplicity. These placid mental states are frequently interrupted by sharp periods of excitement. In some cases a manic-like picture is seen, but most common and characteristic is a feeling of happiness or well-being. This may be actually expressed or evidenced by conduct and may be inferred from the topic of conversation selected by the patient or his general manner of speech. The carelessness and indifference of the patient relative to his immediate circumstances or the future are also characteristic mental symptoms of paresis. The classical picture of megalomania or delusions of great wealth, great physical strength, or great attainment are relatively uncommon to-day. This is probably due to our recognising paresis without these expansive ideas that were essential for the clinical picture as recognised years ago. To sum up, in the mental symptoms associated with the physical signs of tremors, disturbed deep reflexes, pupillary anomalies, speech defects, &c., that complete the picture of paresis, most stress would be laid on definite changes in character or personality, mental or intellectual indolence, mild or marked euphoria, memory disturbances, confusion, excitement, delusions, hallucinations, &c. In addition to this syndrome, a completely positive serology in both blood and spinal fluid in an untreated case adds the other elements essential for our diagnosis of paresis."

It will be seen that most of the cases described in the present series display features answering to the above description.

Method of Treatment.

In addition to the ordinary physical, mental, and serological examination special attention was paid to the condition of the optic discs and visual fields. In no case, however, was there detected any marked disturbance of vision either before or after treatment. It is to be noted that the cases of amblyopia reported had all received larger doses of tryparsamide than were given in the present series. In order that the drug might specially be tested, neither mercury nor bismuth was given, although these are said to intensify the action of tryparsamide. The drug was given in eight weekly doses of 2·0 g. dissolved in 5-10 c.cm. of distilled water intravenously or into the muscles; the latter appears to be preferable as it is less quickly eliminated from the system. There is very little local irritation even when the drug is spilled outside the vein. Nor was there any general reaction except in one case who had a rigor several hours after one of his injections.

Table of Pathological Reactions Before and After Injections (First Course).

Case.	Wassermann.		Cells.	Protein mgr. %	Lange.	Clinically.
	Blood.	C.S.F.				
1	10 +	40 +	+ +	+ +	012311100	Par.
	40 +	10 +	N.d.	N.d.	N.d.	Imp.
2	20	10	Few.	Slight.	N.d.	Par.
	Sl. +	4 +	10	Excess.	51000000	Imp.
3	10	40	+ +	+ +	Comp. pptn.	T.-par.
	10	8 +	+ +	+ +	Paretic curve.	Not imp.
4	8 +	20 +	+	+	N.d.	Tabes.
	Sl. +	4 +	Few.	90	1133210000	Imp.
5	20 +	10 +	+ +	+ +	555552200	Par.
	10 +	20 +	+ +	+ +	555550000	Imp.
6	10 +	10 +	+ +	+ +	N.d.	Par.
	20	30 +	Neg.	30	Neg.	Imp.
7	10 +	10 +	+ +	+ +	55555000	T.-par.
	10 +	70 +	10	120	5555513210	Imp.
8	10 +	20	18	+	55555000	Par.
	Sl. +	8	22	110	55113210	Imp.
9	10 +	10	60	+ +	55555000	T.-par.
	10 +	10 +	–ve.	80	55132100	Not imp.
10	10 +	10 +	+	+ +	55555000	T.-par.
	10 +	10 +	+	+ +	551132100	Imp.
11	10 +	200 +	100	200	5555512100	Par.
	10 +	N.d.	N.d.	N.d.	N.d.	Died.
12	10 +	Neg.	6	100	00232000	Tabes.
	10 +	Neg.	+	+	00232000	Died.
13	10 +	50	85	180	5551321000	Par.
	10 +	10 +	20	100	555132100	Imp.
14	10	20	+ +	80	5555513210	Par.
	10	8 +	Neg.	80	5555555132	Not imp.
15	10	10	4	90	44321000	T.-par.
	10	20	Neg.	75	551133210	Imp.
16	10	Neg.	0	30	Neg.	Tabes.
	10	Neg.	Neg.	Neg.	Neg.	Imp.
17	10	10 +	+ +	+ +	5543210	T.-par.
	10	10	+ +	+ +	55443210	Not imp.
18	10	10 +	80	10	5555543210	Par.
	10	20	5	50	555551210	Imp.
19	10 +	10 +	+ +	N.d.	N.d.	Par.
	10 +	20 +	15	30	555543210	Imp.
20	10 +	10 +	80	100	5555543210	Par.
	10	10	14	100	5555513210	Not imp.

Sl. = Slightly. N.d. = Not determined. Comp. pptn. = Complete precipitation. Par = Paresis. T.-par = Taboparesis. Imp. = Improved.

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[1] Therapeutic Use of Tryparsamide in Neurosyphilis, Lorenz, W. F., et alii, J. Amer. Med. Assoc., May 26th, 1923, vol. lxxx., No. 21.

The injections were repeated in the following cases. The blood and C.S.F. were taken immediately before and after the course.

Case	Blood.	C.S.F.	Cells.	Protein.	Lange.	Clinically
1	40	8	Neg.	50 %	5554432100	Par.
	40	8	Neg.	45	0011100000	Imp.
2	20	4	Few.	Slight.	5400000000	Par.
	20	Neg.	Few.	Slight.	5432100000	Imp.
2*	20	Neg.	(a)	(a)	(a)	Par.
	Neg.	Neg.	Neg.	60	2100000000	Imp.
4	Neg.	8	Neg.	90	5544321000	Tabes.
	Neg.	8	Neg.	90	4433210000	Imp.
6	Neg.	8	Neg.	35	Neg.	Par.
	Neg.	8	(b)	(b)	(b)	Imp.
8	Neg.	4	20	60	3330000000	Par.
	8	Neg.	10	80	3210000000	Imp.
10	40	40	Ex.	Ex.	5554430000	T.-par.
	40	40	28	80	5555443000	Imp.
13	40	20	15	60	5554321000	Par.
	40	8	8	50	4444444321	Imp.
15	40	20	Neg.	45	5544321000	T.-par.
	40	(c)	(c)	(c)	(c)	Imp.

* Third course. Ex., excess.

(a) Contaminated with blood. (b) Contained some blood. (c) Positive: specimen contaminated.

Note.—The cerebro-spinal fluids were put up for the Wassermann tests in amounts of 1·0, 0·5, 0·3, and 0·2 c.cm. The amount of protein was estimated by a nephelometric method, 40–80 mgr. % being considered normal.

Details of Cases.

1. Male, 29. *General paralysis.*—Discharged from a mental hospital in May, 1923, having recovered from, and gained insight into, an acute delusional state. In October, 1923, was noticed to have deteriorated mentally, and was also hallucinated for sight and hearing and had a slight seizure. Threatened to strangle his wife and was taken to the infirmary. November, 1923, admitted to the Maudsley Hospital. He was then distinctly fatuous and unable to understand fully why he was admitted to hospital. He was injected with malarial blood and had eight good rigors. By March, 1924, he had improved mentally and physically and was able to employ himself in simple tasks, but was not able to do the work to which he had been used. He displayed a normal interest in his progress and treatment. He was in good physical condition, with slight tremors of lips and tongue. Reflexes all rather brisk. Coördination and sensation unimpaired. Pupils unequal and sluggish to light and consensual reflex. After a course of tryparsamide there was no evident mental change, but the pupils became inactive to light and consensual reflex. He is now in a Pensions Hospital and recently showed no material change.

2. Male, 35. *Tabes.*—Gastric crises for a year, latterly accompanied by great agitation and emotional display. Had received 6 g. of N.A.B. with little effect on serology beyond slight reduction of Wassermann, cells, and Lange curve. On admission nutrition good. Reflexes all present. Pupils unequal and sluggish to light, but brisk to accommodation. Improved during treatment; crises became less severe and less frequent, but patient complained of continual ache in epigastric region. Course of injection was repeated with some benefit. He has been at work for six months and feels perfectly well.

3. Male, 35. *General paralysis.*—During 1920–23 had several courses of salvarsan. In September, 1923, became depressed and very constipated, and developed numerous hypochondriacal ideas. On admission nutrition fair; tremors of tongue and lips. Reflexes all brisk. Coördination and sensation normal. Pupils contracted, equal, inactive to light and consensual reflex, very sluggish to accommodation. *Facial expression that of melancholia with typical wrinkling. Mental state also that of melancholia. After treatment the pupils were unaffected, but later the depression and the constipation cleared up and the patient has now resumed his normal activities.*

4. Male, 32. *General paralysis.—Was taken up by police* wandering in street and expressing numerous delusions, certified and discharged after nine months with apparently complete mental remission. Referred to the Maudsley Hospital for a course of tryparsamide. On admission in good health, slight lingual tremors, tendon and cutaneous reflexes all brisk. Pupils unequal, and inactive to light and consensual reflex; right pupil sluggish to accommodation, left inactive. After course of injections physical signs unchanged and mental condition remained normal. Has been at work since distributing papers by motor van for several months and has remained well up to present. He is receiving a third course of injections as an out-patient.

5. Male, 41. *General paralysis.*—Sudden onset with excitement and delusions. Was in mental hospital for six months and was discharged with incomplete remission. On admission to Maudsley Hospital, a little euphoric, and lacking complete insight into his condition. Memory defective for recent events. Nutrition fair. Tongue and lip tremulous. Speech slurred. Tendon and cutaneous reflexes brisk. Coördination a little impaired. Pupils unequal, irregular, and sluggish to light. During treatment put on weight, but deteriorated mentally and physically and became dull and fatuous. Relapsed after being sent home and had to be taken to infirmary. He is now at home but his intellect is definitely impaired. The C.S.F. gave a negative Wassermann after a second course of injections.

6. Male, 39. *Tabo-paresis.*—Has felt "nervous" since 1919; for at least two years there has been steady deterioration and very evident loss of business acumen. On admission he was euphoric, very childish, fatuous, poorly orientated, and amnesic. Nutrition good. Marked labial, lingual, and digital tremors. Speech slurred. Knee- and ankle-jerks absent. Rombergism +. Pupils unequal, irregular, and inactive to light and consensual reflex. Deterioration continued and he was removed to an infirmary.

7. Male, 58. *Tabes.* — Christmas, 1923, complained of backache and in the course of a week or so lost use of legs. On admission very emaciated. All tendon jerks absent; arms and legs very ataxic. Pupils equal and active to light and accommodation. Deteriorated mentally and physically, and became steadily more helpless. Post mortem showed advanced arteriosclerosis; typical degeneration in dorsal columns of cord. Brain not obviously affected, but microscopical examination showed perivascular infiltration of small cells and a certain degree of neurotic degeneration. The C.S.F. in this case was negative both before and after treatment but gave a luetic Lange reaction. He also had a carcinoma of the lower end of the œsophagus, without secondary deposits.

8. Male, 51. *General paralysis.*—Few months ago became depressed, worried, restless, and forgetful. On admission emotional and confused, poorly orientated, and amnesic. *Physically in poor condition.* Marked lingual *and digital tremors.* Speech slurred. *All reflexes exaggerated. Sensation and coördination normal. Slight paresis right arm; tongue protruded a little to the left. Pupils of medium size, regular and active consensually, and to light and accommodation. During treatment became less confused, but is now distinctly dull and has evidently deteriorated. Physically he has improved, has increased in weight, and the paresis has cleared up. The tremors persist and the pupils react sluggishly.*

9. Male, 31. *Tabo-paresis.*—Onset in July, 1923, with attack of confusion. Became acutely excited and was in mental hospital up to May, 1924, during which time he had malarial treatment. He improved enough to be discharged and was admitted to the Maudsley Hospital for a course of tryparsamide. On admission he was in fair condition. There were marked tremors of face, tongue, and fingers. Speech a little slurred. Knee- and ankle-jerks absent. Rombergism slight. Pupils unequal, irregular, and sluggish to light and consensual reflex. Mentally he was exalted and overactive. During treatment he increased greatly in weight and became less tremulous; physical signs otherwise unchanged. Mentally he became dull and distinctly vegetative and had evidently deteriorated. He is living at home and has received a second course as an out-patient.

10. Male, 59. *Tabes.*—Complained of headache and "shakiness" since attack of "influenza" in December, 1923. Also gave history of "washing-basin" sign. On admission no evident mental disturbance. General nutrition good. Slight lingual and digital tremors. Knee- and ankle-jerks absent. Rombergism +. Pupils myotic and inactive to light and consensual reflex. During treatment complained less of headache and felt much better. Physical signs unchanged.

11. Male, 26. *General paralysis.—In 1920 was* discharged from the police for being asleep on duty. Has done [illegible] work up to August, 1924, when he began to have "fits." Later was taken to infirmary with "status epilepticus." Referred to Maudsley Hospital *for opinion* as to relation of old G.S.W. head to the "fits." *Mentally* rather childish and a little overactive, and at *the* same time very easily irritated and apt to take *offence.* Speech a little slurred when he became excited. Right knee- and ankle-jerks definitely less brisk than the left. Pupils a little irregular but reacted normally. Optic discs normal. There is a [illegible]

slight depression in the right parietal bone. After course of injections became much more stable but is still rather childish.

12. Male, 48. *General paralysis.*—Had syphilis 30 years ago. Indulgence in alcohol and smoking with "high pressure life" for years. Several attacks of giddiness recently which culminated in a mild confusional attack during which he was brought to the hospital. His pulse was then uncountable; there were no other physical signs. Next day he was mentally clear and gave a good account of himself except for the events of the three preceding days. Heart dilated, pulse 150, regular. Electrocardiogram showed 2 : 1 heart-block with auricle 300, ventricle 180. After course of Nativelle ampoules he developed auricular fibrillation, and on cessation of digitalin injections the heart became slow and regular and has remained normal since (seven months). In view of old infection, blood and C.S.F. tested and found to give positive Wassermann. He presents no physical or mental signs at present, but the serology has not appreciably been affected by a course of tryparsamide.

Summary of Results.

(a) Clinical.		*(b) Serological.*	
Improved	13	Improved	7
Not improved ..	5	Not improved ..	11
Died..	2	Not improved, died	2
	20		20

Several cases who showed both clinical and serological improvement at the end of the first course of injections have received second and third courses at intervals of about two months. Their improvement has been maintained, and two (Nos. 1 and 5) now have a negative Wassermann in the C.S.F., although the Lange reaction is still slightly positive. It is to be noted that both clinical and serological improvement may continue for some time after the completion of a course of injections. The condition of the patient at the end of treatment and the reactions of his fluids are not to be accepted as the final result; the drug continues to exert a beneficial effect for some weeks afterwards. It has been noticed that the skin becomes clearer and the general bodily condition improves under the "tonic" action of tryparsamide, which has been remarked upon by American workers. However, as these patients have been under observation for less than a year their ultimate fate remains to be seen. No. 12 is of special interest as his heart condition was quite severe enough to account for his confusion, and he has never shown any neurological signs of paresis in spite of the reactions of his fluids, and of the fact that they were not influenced by tryparsamide. One case of tabes (No. 2), who had had very severe gastric crises for over a year in spite of intensive treatment with mercury and N.A.B., is now, after two courses of tryparsamide, back at work and feels perfectly well although physical signs persist. Dr. Aileen Boyd, working in the laboratory at this hospital, has confirmed the observations of American workers that arsenic may be detected in the C.S.F. for two or three days after an injection of tryparsamide.

As regards the diagnosis of the cases in this series one may recall the words of Head and Fearnsides,[2] who stated :—

> "It is quite impossible, in many cases, to diagnose the difference between syphilitic encephalitis and dementia paralytica without observing the effect of treatment and the changes it produces in the Wassermann reaction . . . Numbers of persons suffering with cerebral syphilis are condemned to die untreated because they are thought to be suffering from 'general paralysis,' when in reality they are examples of a curable disease. No complete diagnosis or prognosis can be made until the patient has been observed and treated for at least six months, and the C.S.F. has been systematically examined from time to time."

In no case in this series was there produced any remarkable result such as might not possibly have been obtained by the administration of other arsenic compounds. Several cases of paresis appear to have had their downward course arrested, while others have improved to a lesser extent. Whether tryparsamide is really more potent than other arsenicals is not proved in this series of cases, but the drug is certainly worth further trial. It is easy to administer and does not appear to be toxic in the doses used.

Finally, I wish to record my thanks to Sir Frederick Mott for his help and for the interest he has shown in this investigation; to Dr. Edward Mapother, the medical superintendent, for his permission to publish these cases; and to the staff of the laboratory for the pathological investigations and other help.

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[2] Head, H., and Fearnsides, E. G.: Clinical Aspects of Syphilis of the Nervous System, Brain, September, 1914, xxxvii., 1.

THREE CASES OF UNUSUAL FORMS OF LIPOMATA OF THE BREAST.

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IN an organ such as the breast, which consists so largely of fat, which has fat for its supporting tissue filling out all the interstices between the lobes and the lobules, which is embedded in fat, it is no wonder that we frequently meet fatty tumours. These may arise in the fat over the breast, in the fat under the breast, or in the fat inside the capsule of the breast. The last form is the rarest. What it is that determines the growth of a fatty or other simple tumour is unknown, but we imagine that it is something which differs from the stimulus which causes the growth of a malignant tumour. It is therefore always interesting to find both a malignant tumour and an innocent tumour in the same person, and doubly so when they occur in the same organ.

In the first case reported there was a local intramammary lipoma and a scirrhus tumour in the same breast. In the second case there was a large diffuse intramammary lipoma occupying and distending both breasts. In the third there was a fatty tumour in one breast and a scirrhus in the other. The lipoma showed the unusual occurrence of the deposition of calcium salts in the fatty cells.

CASE 1.—L. S., aged 51, was admitted to St. Mary's Hospital on May 5th, 1924, complaining of a lump in the breast.

History.—A lump was first noticed in the left breast about two months ago. About six weeks ago she had a fall and bruised her ribs and back; as a result of the fall the breast was very painful and she applied hot fomentations. No diminution in size has taken place since then.

Condition on Examination.—A lump about the size of a walnut could be felt deeply situated in the upper and outer quadrant of the breast. It was fairly hard and seemed to be attached slightly to the pectoralis major muscle, it was free from the skin, and there was no retraction of the nipple. Small glands could be felt in the axilla. Until Christmas her periods had been regular, since then they had ceased. The left side of the lump seemed distinctly tender. The mass was believed to be innocent.

Operation.—On May 10th a circumferential incision was made round the lower margin of the breast and the breast removed subcutaneously, leaving the nipple. The axillary tail was divided with the cautery. A drain was placed in the wound for 24 hours. She left the hospital with the wound healed in ten days' time.

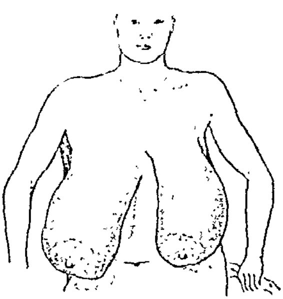
Pathologist's Report.—The tumour removed from the breast proved to be an encapsuled lipoma about the size of a ping-pong ball, in which the fat was bright yellow in strong contrast to the pale fat in and surrounding the breast. At one side of the fatty tumour, apparently adjacent to or actually in its capsule, is a hard area which on section appears like a rotten pear. This mass, which was the size of an ordinary grape, proved to be a carcinoma spreading actively at the periphery. The breast showed chronic mastitic changes throughout its substance.

Intramammary lipomata are so rare that even their very existence was denied till lately, and Gross says, "I am not aware of a single case of circumscribed lipoma occurring in the gland itself," a statement which is concurred in by Bryant in 1887. We know, however, that they do exist both in the localised and in the diffuse form, and this is a very good example of a localised tumour. The fat of which it was composed appeared to have no relation to the fat in the surrounding breast or in the breast capsule, being of a strikingly different colour. Delage reported a case where multiple intramammary lipomata were found, the breast being described as feeling like "a bag of oranges," and later five separate tumours were removed from the breast. In this case, however, a lipoma had been removed from the breast some ten years previously, and I strongly suspect that some small lobules of the original tumour may have been torn off and remained in small loculi of the capsule and developed into five separate tumours later. It is a possibility to be considered.

The lipoma in the above case appeared to be the original tumour and the malignant growth to have followed it. From what we know of the origin of malignant growths from chronic irritation it is only natural that we should suppose that this malignant growth was initiated by the irritation of an abnormal growth in the neighbourhood.

CASE 2.—Mrs. C., aged 41, was sent to see me by Dr. G. A. Finegan on March 28th, 1922, on account of the large size of her breasts.

History.—For two years both breasts have been getting larger, the right more so than the left. She has experienced a dragging sensation and shooting pains in both breasts during this time. The breasts became larger, more uncomfortable and painful at the periods, and lately this has been more marked, and the pain has changed to a more disagreeable character.



Previous History.—She has had one child, now 12 years old; this she suckled for ten months. Sixteen months later she had a miscarriage at the fourth month; no other pregnancies.

Condition on Examination.—The breasts were both very large and pendulous. (See figure.) One could not quite class them with the huge breasts of parenchymatous hypertrophy, but they were approaching that condition. Over the left breast the veins were the more prominent. Both breasts felt irregularly lumpy, but there was nothing else to be made out. There was no discharge from the nipples which she said had always been of large size. She was put upon a course of tablets of polyglandin.

July 16th, 1923: She was seen again and the breasts were certainly smaller, but still very bulky and pendulous. The right measured 15½ inches and the left 14 inches in circumference at the level of the costo-mammary groove. The nipples were 5 inches across. The veins were still prominent over the left breast. As she was now tired of the continual drag of the breasts and was unlikely to have any more children she expressed a wish to be rid of them. Operation was performed on the 27th and both breasts were removed by flaps. On cutting the breast tissue one was surprised to find that the knife only passed through adipose tissue, no gland substance being visible, and there was a complete absence of the white-looking tissue met with in hypertrophy of the breasts. About 3 lb. of this fatty tissue was removed from each breast. There was no capsule and the fatty tissue permeated the whole gland. The flaps left a sufficiency of breast tissue to fashion shapely breasts and enough skin to cover them, the flaps being planned so that the scar should lie in a circular manner at the lower border of the newly-shaped organs. The operation proved eminently satisfactory, and the patient had a very presentable figure. The nipples were removed, but as they were nearly flat from the stretching of the skin and the immense areolæ were very pale, it was not a noticeable loss. The wounds healed easily.

Pathological Report.—On coronal section the tumours had a circular appearance surrounded by skin, and were 8 by 9 inches across. They had the appearance of ordinary fatty tissue through which coarse greyish strands could be seen running. These strands appeared to the naked eye to be ordinary fibrous trabeculæ. On microscopic section, however, these strands proved to be the compressed remnants of the breast tissue, showing that the fatty tissue had collected in the interlobular and interlobar spaces. There was no capsule to the fatty tissue which was diffused throughout the whole gland, and did not differ either in colour or structure from the ordinary mammary fatty tissue. The condition was evidently a diffuse intramammary lipoma.

Case 2 is a type of the diffuse intramammary lipoma. It is a form of tumour which is excessively difficult to diagnose, as it has no edge or limit, and appears to be hypertrophied breast tissue. It is remarkable in that it was bilateral. In this case, as in Begouin and Haekel's cases, the essential tissue of the breast was split up into small islets lost in the fatty tissue. Whether this condition prevents the breasts from functioning is unknown, as no cases have been reported, but these separated ducts have been known to become distended with a thick milk-like fluid.

CASE 3.—A widow, R. L., aged 70, was admitted to St. Mary's Hospital on June 16th, 1924, with lumps in both breasts.

History.—Patient had known of a soft lump in her left breast for more than eight years. It never gave rise to pain or troubled her in any way, so that she took no notice of it. For the last eight or nine months she had noticed the right breast getting smaller and a lump gradually forming. There were no symptoms till about a month ago, so she took no more notice of it than of the lump in the other breast. During the last month, however, she has had slight pain and there has been a slight discharge.

Condition on Admission.—The left breast contains in its upper and inner quadrant a soft fluctuant mass which is obviously a lipoma. The right breast is atrophic, but there is a tumour the size of a bantam's egg to the inner side of the nipple. The tumour is stony hard, quite fixed to the skin, and to the muscles underneath. The skin is discoloured over the mass, and is ulcerated at one spot. It seems to have incorporated into itself nearly all the breast tissue and the strongly retracted nipple.

Operation.—The lipoma shelled out easily. The bulk of it lay superficially between two lobes of the breast, apparently outside the breast tissue, but there were two lobulations which extended well down between the lobes of the breast, so that it was impossible to say whether it had originated inside or outside the breast capsule. It seemed to me, however, that it would be easier for the tumour to have started inside the breast and have spread to the outside, than to have started outside the breast and to have sent two prolongations into the breast substance through the capsule. The right breast was removed by a radical operation. The lipoma, which measured about 2 by 1 by 1 inches, was an encapsuled mass of bright yellow fatty tissue which presented nothing peculiar to the naked eye. On section, however, numerous areas were seen where calcium salts seemed to have been deposited in the fatty contents of the cells. The carcinoma was of the hard scirrhous type.

In this case the association between the malignant and the benign tumour was probably accidental, the first being in one breast and the second in the other. What is interesting, however, is the deposition of calcium salts in the fatty tumour. Sick reported a fatty tumour from the breast of a woman which contained areas of hyaline cartilage in the lipomatous tissue. In Guy's Hospital museum there is preserved a "large adipose tumour, which measured 23 inches in circumference, and was removed after death from the breast of a married but sterile old woman, aged 87. When 30 years of age she observed the tumour in the upper part of the right breast, and this she showed to Sir Astley Cooper on Jan. 9th, 1806. She remembered the date, because it was the day on which Lord Nelson was buried. . . . When a section was made it was found to consist of fat, with a piece of bone in the centre." Most of the bone-containing tumours of the breast are either sarcomata or very closely allied to them, but as this tumour had been known for 57 years we may suppose its innocent nature. It is, however, significant that sarcomata have been known to become fatty, and one such tumour was shown before the Royal Society of Medicine, Section of Surgery (vol. xiv., 1921, p. 33). Chipault noted a pendulous lipoma the size of two fists growing from the inner surface of the thigh of a woman of 69, which had been present for 29 years. On section after removal this was found to be a lipoma calcified in parts.

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DIABETES, SURGICAL INFECTIONS AND INSULIN.

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MY object, in the present paper, is to consider one of the many problems related to the use of insulin in the surgical complications of diabetes, basing my observations on a series of 53 such cases[1] in which insulin has been employed.

So high an authority as Dr. E. P. Joslin has expressed on this question the following opinions: "Serious infections occurred with several patients and in these insulin was of no avail"[2]; "It has been recognised that the urine would not become sugar-free in the presence of an infection, even with insulin at liberal doses"[3]; and "*When dealing with infections a rigorous attempt should not be made to get the patient sugar-free either before or after operation.* This is seldom possible and, even if attained, is secured at too great a loss of body tissue."[4]

Despite the authority of Dr. Joslin, whose pupil I am proud to be, and to whom I am indebted for most of my knowledge of diabetes, I have found from the beginning that the above-mentioned views are not sufficiently substantiated by the facts on which they seemed to be based. If Dr. Joslin's somewhat pessimistic conclusions are not correct it might happen that a given patient would be left to die, whose life might be saved by rendering his urine sugar-free or the blood-sugar normal by means of insulin, given in doses large enough and distributed in a sufficient number of injections. It is therefore very important to decide: (1) whether the metabolic derangement induced by infection in some cases is really so profound as to render it impossible to make the blood-sugar normal by means of insulin or whether, on the contrary, insulin in sufficiently large and properly distributed doses might not, in all cases, accomplish that result; and (2), on the assumption that it is possible, whether it is all-important or not to attain absolute sugar freedom in urine or even a quite normal blood-sugar level in cases of surgical infection in diabetic patients.

As to the first point, the actual clinical facts that Dr. Joslin presents in support of his views are the following. In the case of a young man with septicæmia no effect, beneficial or otherwise, was noted with the 77 units which he received during eight days. In a case with erysipelas who, before the infection developed, was kept sugar-free with 12 units, a much larger daily dose was without effect. In a case with cerebro-spinal meningitis insulin was discontinued when the true diagnosis was made, after 30 units of insulin had been given in two injections, and glycosuria persisted to the end.[5] Finally, even 80 units of insulin failed to free the urine of sugar in a diabetic suffering with carbuncle.[6]

In all this there is nothing to show that what was not obtained with 80 units daily, or less, in the cases just mentioned might not have been obtained with higher doses, distributed in a sufficient number of injections. That this is very probable is suggested by a very interesting case recently reported in THE LANCET by R. Owen-Jones,[7] who expresses the same opinion, and also by my own experience in cases such as Nos. 155, 218, 178, and 403, amongst others, of my series.

Clinical Records.

Cases 155 and 218 suffered with necrotic cellulitis of a lower limb, subsequent to infection of slight wounds. When I saw them for the first time both were in a very serious condition. In both the disappearance of glycosuria was obtained, but not before so much as 110 units in five injections, in Case 155 (also in September, 1923), and 176 units in eight injections in Case 218 had been given in 24 hours. Both patients died from septicæmia (pneumococci and tetrageni respectively), and the last specimens of urine passed were sugar-free, the dose in the last period of 24 hours being not less than 200 units in Case 155. Case 178 died from peritonitis after being operated on for perforated gangrenous appendicitis. Before the attack of appendicitis the patient was sugar-free (with insulin); before the operation there was a slight glycosuria; immediately after the operation, which was performed under ether and with adequate insulin preparation, the urine was sugar- and acetone-free; some hours later glycosuria was again present, in a rather intense degree, but with the aid of insulin it decreased again, and before death occurred, about 30 hours after the operation, the urine was sugar-free and remained so to the end. I cannot tell the exact amount of insulin that I injected, but it certainly was well above 80 units in 24 hours.

Despite the facts just mentioned I began to think that Dr. Joslin might be right in the point under consideration when, in Case 281, which I saw for the first time in an extremely grave condition, with acute gangrene of one foot and septicæmia, insulin, in doses of about 30 units every eight hours, continued until the patient's death, 36 hours after amputation, failed to change the apparent intensity of the reaction obtained with the Benedict test. This doubt was strengthened when the same failure recurred in Case 403. This patient had a carbuncle at the back of the neck that had been operated upon two days before without previous insulin treatment, and very severe glycosuria and acidosis subsequently developed. The administration of 180 units of insulin in seven injections, in a period of 21 hours, was unsuccessful. But finally, when 240 units had been administered in nine injections in a period of 31 hours, during which no food was given, the urine became sugar-free and was kept so, except for very faint traces in some individual specimens. To accomplish this permanent result and feed the patient with a comparatively liberal diet it was necessary to give about 200 units in eight injections daily for a week when decreasing doses were sufficient. Three months later the wound was healed, the urine was sugar-free without insulin with a diet containing about 80 g. protein, 120 g. fat, and 90 g. carbohydrate.

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[1] R. Carrasco-Formiguera: La Insulina en les Complicacions irurgiques de la Diabetes. Anals de Ciencies Mediques, Barcelona, 1924, xviii., July and August.

[2] Joslin, E. P.: Treatment of Diabetes Mellitus, third edit., hiladelphia and New York, 1923, p. 33.

[3] Ibid., p. 636.

[4] Ibid., p. 618.

[5] Ibid., p. 99.

[6] Ibid., p. 619.

[7] Owen-Jones, R.: THE LANCET, 1924, ii., 1113.

I think that this case very definitely shows that no pessimistic conclusions as to the possibility of abolishing glycosuria or normalising glycæmia in the presence of severe infection need be drawn from failures in cases in which doses not higher than 80 units in 24 hours were employed, as in Joslin's cases, or even when as much as 120 units in the same period of time were given, as in my Case 281.

As to the second point, it seems to me that Dr. Joslin's negative advice is mainly intended to emphasise the fact that extreme and prolonged underfeeding, carried out in order to render the urine sugar-free in diabetic patients suffering from severe infections, will in most cases be of no avail and may prove disastrous to the strength of the patient and to his powers of fighting the infection. This, however, is not the same thing as the above-mentioned advice as formulated: "When dealing with infections a rigorous attempt should not be made to get the patient sugar-free," since now we have in insulin the best means of fighting efficiently against hyperglycæmia and enabling us at the same time to feed the patient adequately.

My above-mentioned patient (Case 155) was kept with nearly no food for one day, then with no food for the next two, and on the fourth day, when he received only about protein 1 g., and carbohydrate 7 g., with practically no fat, and 30 units of insulin (in the four days he received a total amount of 173 units), he excreted 21·5 g. of nitrogen by the urine, corresponding to a protein destruction of about 140 g. Three days later, with 110 units of insulin, he received protein 9 g., fat 2 g., and carbohydrate 82 g., was sugar-free, and excreted only 8·4 g. of nitrogen, corresponding to a protein destruction of about 59 g. Two days later, with 80 units of insulin, the protein destruction was only about 62 g., as calculated from a nitrogen excretion in the urine of 8·9 g., despite an increase of the diet up to protein 51 g., fat 80 g., and carbohydrate 110 g., although 5·6 g. of dextrose were excreted. In my Case 218 a negative protein balance of −64 g. protein on Jan. 6th, 1924, when he received 17 g. protein, 90 g. fat, 119 g. carbohydrate, and 130 units of insulin (third day of insulin), improved to a balance of −4 g. protein on Jan. 22nd, when the patient received 23 g. protein, 205 g. fat, 61 g. carbohydrate, and 80 units insulin, there being very faint traces of glycosuria; and even further improved to a positive balance of +17 g. protein on Feb. 11th, when the patient received 45 g. protein, 165 g. fat, 80 g. carbohydrate, and 80 units insulin, without glycosuria. My successful case (403) with a carbuncle, in which it proved so difficult to free the urine from sugar, was subsequently kept sugar-free, and liberally fed all through except for the first two or three days of treatment.

It being possible in all diabetic patients, even in the presence of severe infection, to combat the hyperglycæmia without any dangerous underfeeding, the question remains: Is it necessary, in all or in some such cases, to give all this insulin and to take all measures that may be required to render the urine sugar-free or the blood-sugar level normal?

In many instances a certain decrease of the glycosuria or a certain lowering of the blood-sugar level, although not bringing about sugar freedom or normal glycæmia, suffices to change for good the course of events in cases of infection in diabetic patients that were doing very badly. But it would be wrong to conclude that under such circumstances it is never essential that glycosuria be thoroughly abolished or glycæmia be brought to normal. Some such cases do well, either from the beginning or from a given moment, even although no dietetic or other measures are taken to reduce the glycosuria, while this does not actually decrease until the local process has already begun to mend, yet nobody would advise that in all cases no effort need be made to reduce the glycosuria. The truth is that the blood-sugar level at which an infectious process may do well or cicatrisation follow its normal course is different in different cases, depending on circumstances that are, thus far, unknown to us. The possibility exists that in many cases this critical level is just at or about the normal point.

This possibility is well illustrated by Case 332, a woman with no history of diabetes, but with a very large surgical wound of the abdominal wall, which showed no tendency to heal for some weeks. Eventually a necrotic focus appeared in one part of the wound. The urine was tested for sugar and a very faint trace found. When I was called for the first time the Benedict test was negative, but the blood-sugar, three hours after the ingestion of 200 c.cm. of milk, was 0·14 per cent. I did not consider it probable that such a slight departure from the normal could have anything to do with her condition, but nevertheless put her under treatment. Rather to the surgeon's and my own astonishment, from the third day, when the blood-sugar was 0·095 per cent. under circumstances comparable to those of the previous analysis, the wound began to granulate, the necrotic area began to get cleaner, and in a remarkably short period of time the process of healing was completed.

Since the possibility exists that complete sugar freedom and even normal glycæmia may be essential for a satisfactory course of events in a diabetic patient with an infectious process, and since a normal blood-sugar level may be attained in all cases, even in the most severe (unless there is not time enough before the patient dies), with the help of insulin and with no need for undue underfeeding, it is my opinion that, when a given case of this kind is not doing quite well, every effort should be made in order to abolish glycosuria and even to attain a normal blood-sugar level by the means indicated.

The fact must be remembered—and I have found many cases in my experience—that a harmful hyperglycæmia may exist even although no traces of sugar are found in the urine. In cases that are not doing well, even when no sugar is found in the urine, it is therefore necessary to ascertain whether the blood-sugar be normal, and to render it so if it be in excess.

Summary.

From personal experience of cases of surgical infection in diabetic patients and of their treatment by insulin the following conclusions are drawn:—

1. Even in the more severe cases of infection in diabetic patients it is always possible (unless there is not enough time before the patient dies) to attain a normal blood-sugar level if insulin be used in large enough doses properly spaced throughout the day.

2. It may be difficult, or even impossible, to keep the blood-sugar level absolutely normal all the time through, but it may be kept so most of the time and not far from normal the rest of the time.

3. Such a result may be obtained without any dangerous underfeeding, which must be carefully avoided. In fact, with an adequate combination of diet and insulin such patients may be kept sugar-free and at the same time well-nourished, much better than would be possible by any other known measures, dietetic or otherwise.

4. In many cases infection in a diabetic patient may follow a favourable course even when there is a certain degree of glycosuria or hyperglycæmia, but in other instances it may be very different.

5. So long as a given case of infection in a diabetic patient, in which glycosuria or even only hyperglycæmia persists, is not doing well, all efforts must be made to render the urine sugar-free or even to attain a normal blood-sugar level, with the help of insulin and avoiding undue underfeeding.

DIVERTICULUM OF THE PHARYNX.

By J. W. THOMSON, M.B., C.M. ABERD.,
SENIOR SURGEON, CLAYTON HOSPITAL, WAKEFIELD.

DIVERTICULA towards the upper end of the pharyngo-œsophageal tract have been variously described as pharyngeal, œsophageal, and pharyngo-œsophageal. It has been shown by Killian that the pulsion, or pressure, diverticulum is of pharyngeal origin, and consists of a protrusion of the mucous and submucous coats between the circular and oblique fibres of the crico-pharyngeus muscle in the postero-median aspect of the pharynx. Killian also points out that the transverse fibres of this muscle act as a sphincter, in the same way as does that at the cardiac extremity. Cardiospasm causes dilatation of the whole circumference. Œsophagospasm causes bulging at the weakest part of the pharynx, as the cricoid cartilage and the thyroid gland strengthen the anterior and lateral walls.

These diverticula may possibly be of congenital origin, though they have not so far been discovered in infancy or childhood. Some cases are ascribed to injury of the œsophagus; others, again, to stenosis of the first part of the œsophagus, or the cause may be extrinsic, as from pressure by a tumour. They occur mostly in adult males, and symptoms are rare before 40. The sac passes generally to the left, sometimes to the right, of the œsophagus, and may reach the mediastinum.

Clinical Record.

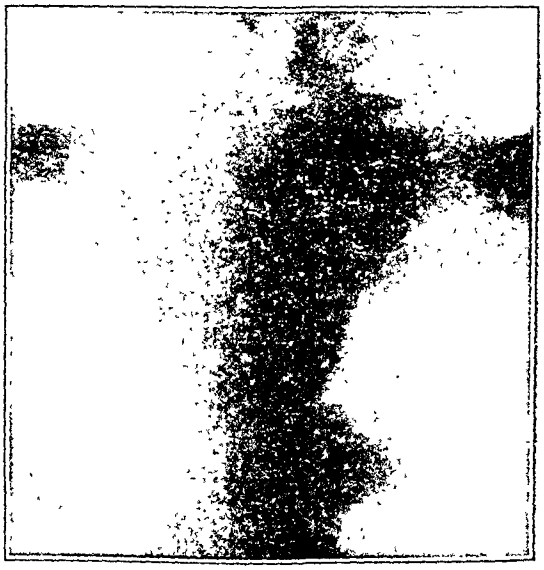
Mrs. E. J., aged 63, admitted to the Wakefield Hospital on April 11th, 1924. For 14 or 15 years she had difficulty in swallowing, but when younger she could overcome this difficulty. The condition gradually grew worse, but not until two years ago did she consult a doctor. It was suspected that she was suffering from a diverticulum of the pharynx, and this was confirmed by X ray examination. The barium meal was seen to fill the pouch and then overflow into the œsophagus. The diverticulum was not palpable. Operation was refused and she left the hospital.

Five months later she was readmitted. She had spent those months in a constant vain endeavour to satisfy the cravings of hunger by filling the pouch with food, when some would probably overflow into the œsophagus. The contents of the sac were then regurgitated, and this process was repeated over and over again. Such articles as peas and currants would remain in the pouch for about a week. The frequent filling up of the pouch with saliva added to her misery and disturbed her sleep. Worn to a shadow (her weight, at one time 15 st., was now about 8 st. 10 lb.), scourged with bed-sores, distraught with a gnawing hunger and a torturing thirst, she was in imminent danger of death from starvation.

Immediate removal of the pouch was out of the question, therefore gastrostomy under local anæsthesia was performed. She continued to eject the contents of the sac for a day or two after the operation. Recovery was rapid, and she was able to be up in a chair in a fortnight. In five weeks it was considered that she was fit to have the diverticulum removed. The various methods of performing the operation were considered—e.g., the two-stage operation, invagination and diverticulopexy. Further X ray examination was carried out, and the sac seemed longer and narrower. The examination was more difficult, as the barium meal was frequently regurgitated before it completely filled the sac.

Operation.—Chloroform was administered, preceded by morphine and hyoscine. Local anæsthesia would have been eminently suitable and perhaps preferable. An incision was made along the anterior border of the left sterno-mastoid. The depressors of the hyoid and the sterno-mastoid were separated; the omohyoid was divided, the trachea and thyroid were retracted inwards, and the sac was at once exposed, lying between the pretracheal and prevertebral layers of the cervical fascia, and passing into the posterior mediastinum. It was not difficult to separate it from those layers of fascia, though at its base one or two fibrous adhesions were divided. Some muscle-fibres were seen to run over the neck of the sac in a vertical direction. Its length was 3½ inches, its width 1 inch. The opening into the œsophagus was wide, and digital examination revealed no stricture. The sac was clamped and divided and sutured, after the manner of Mayo's operation for umbilical hernia. When released from the clamp it disappeared behind the pharynx. It seems, therefore, that if on division it was allowed to escape from the clamp it would be difficult to recover, and dangerous sepsis might ensue. A small tube was inserted, which was removed in 36 hours, and about this time fluid was given by the mouth. Swallowing was difficult and painful at first, but re-education of the mechanism of deglutition was almost complete in a week, about which time she was got out of bed. The wound healed well, no sinus formed, and no bougie was passed at any time. It is important that the proximal end of the diverticulum should be clamped before elevation or manipulation of the sac should disturb its contents, which might otherwise be aspirated into the lung.

If the condition was due to spasm, when did the spasm pass away? Did it disappear when it had formed a pouch, or did it pass away during the five weeks' rest following the gastrostomy, or did the removal of the sac cause it to disappear? One may wonder, too, how a sac without, or with deficient, muscular tissue in its walls can so readily empty itself.



Showing diverticulum of pharynx.

(Radiogram by Dr. J. Alexander Thomson.)

Pathological Report by Dr. P. L. SUTHERLAND, *Pathologist to the Wakefield Hospital.*—"Microscopic examination of sections of the diverticulum shows that it is composed of a layer of epithelium surrounded by loose areolar tissue containing scanty and irregular muscle bundles arranged both longitudinally and circularly. The epithelium, which occupies from one-quarter to one-third of the total thickness of the wall, is formed of from 15 to 20 layers of stratified cells, and is very much folded. The muscle-fibres do not form continuous circular and longitudinal layers, but occur as irregular bundles arranged close to the epithelial lining. Beyond the muscle-fibres there is a layer of loose areolar tissue, containing large numbers of blood-vessels and small clumps of lymphoid tissue. Glands are present, but are very small and scanty. The epithelial lining of the diverticulum is thicker than normal, and the muscular coat is defective, and there is no orderly arrangement of the coats into muscularis mucosæ, areolar tissue, and muscle bundles."

The patient is now in good health, has no difficulty in swallowing, and is gaining in weight.

PS.—Since writing the above I learn that food is occasionally ejected forcibly through the mouth and nose, as if there were some continuance or recurrence of the spasm. Further X ray examination (April, 1925), however, showed no delay in the passage of food, and no narrowing at the site of operation. There is a steady gain in weight.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SUB-SECTION OF PROCTOLOGY (SECTION OF SURGERY).

X RAY DIAGNOSIS OF COLON DISEASE.

A MEETING of this Sub-section took place on May 13th, Mr. F. SWINFORD EDWARDS, the President, being in the chair, when a discussion took place on the Value of X Rays in the Diagnosis of Diseases of the Colon.

Dr. GILBERT SCOTT, in opening, said this subject was equally important to the surgeon and the radiologist, and he did not think the radiology of the colon had been developed to an equal extent to that of the stomach, perhaps because most surgeons felt that they had not derived full diagnostic value from the method, and hence they ceased to send to the radiologist the material they otherwise might. The value of this diagnostic means could be greatly enhanced if surgeons would (1) supply material to the radiologist, (2) keep the latter informed as to results, especially as to failures, and particularly in private cases. Dr. Scott said he feared that too much was expected of the radiologist; if he overlooked a lesion, or committed a diagnostic error, it was common for the whole examination to be regarded as discredited. The radiologist was working under difficulties, and it must be remembered that patients' interiors varied as much as did their exteriors within normality. At London Hospital every gastric case was given an opaque meal examination, as it was of considerable diagnostic value in such cases, and large series of radiograms enabled the worker in this field to see the error of his ways.

The value of the method depended on (1) correct technique, and (2) correct interpretation. He regarded the opaque enema as of the same value for colon disease as was the meal for stomach cases. In the former, by the time an opaque meal reached the lower part of the gut it was so broken up and haustration was so marked that at the end of the tedious examination one was left in doubt whether or not an organic lesion was present. Hence, for colon cases, or cases in which the colon was suspected to be diseased, he had for some time discarded the barium meal for the opaque enema. He would, therefore, in this discussion, deal with that method by which the whole of the large gut could be visualised. The gut could be manipulated under the screen, and an expert could complete the examination in half an hour without discomfort to the patient. He emphasised the importance of a careful preparation of the patient, as fæces in the colon might lead to errors in diagnosis.

If the technique was correct, the most difficult part remained—namely, the correct interpretation of what was visualised. There were two kinds of error of interpretation: (1) passing a lesion undetected, (2) diagnosing by the rays a lesion which was not found at operation, the second being far the more common. Fæces in the colon, air-locks, pressure from without, spasms, or a partially filled gut might all be reported as organic lesions. The most difficult cases were those with small and atypical lesions. It was almost impossible by this means to differentiate between tubercle and new growth.

Dr. Scott narrated and illustrated a series of examples to elucidate his subject, remarking that at the Mayo Clinic the lesion diagnosed by the rays was found at operation in 91 per cent. of the cases, the lesion not having been demonstrated in the remaining 9 per cent. He thought a serious effort should be made to bring this country abreast of other countries in the matter of a thorough study of the normal appearances; at present there was too great a tendency to regard any deviation from what was considered normal as necessarily pathological. There was also, with us, a distinct lack of collaboration between the surgeon and the radiologist.

Mr. HAMILTON DRUMMOND said his interest in this method of diagnosis was of some duration, but his earlier optimism had been mellowed by subsequent experience, though he still regarded radiology as an important means of diagnosis. Pitfalls were numerous, and considerable experience was needed before being able to estimate the value of the rays in this regard. The only way to palpate the colon was to use both the fingers and the sight, securing a concentration of both faculties. During the last five years he had been his own radiologist for his colon cases. He felt that if the surgeon was to have the full benefit of radiology he should furnish to his X ray colleague a full history of the case, or, preferably, meet him in consultation over the patient. Sometimes patients were sent to the X ray department before a thorough clinical examination had been made; this latter should include the use of the sigmoidoscope. The question might be asked whether one was justified in basing a diagnosis of malignant disease of the colon on the results of X ray examination alone, and he would answer that X ray examination of the colon by barium meal or opaque enema was seldom a prime factor in diagnosis; symptoms and history furnished information of the greatest diagnostic value, though X rays might assist in determining the site of the disease. He had seen patients with growth in the hepatic flexure, with considerable stenosis, in whom a barium meal passed through the colon beyond the growth without delay. There might be a similar happening in the case of a tight stricture of the ileum. X rays were of great value in the diagnosis of such conditions as a pelvic cæcum, a V-shaped transverse colon, and various kinks in the lower ileum and pelvic colon.

Dr. BERTRAM SHIRES said that for many years he had carried out the two methods of examination in colon cases, and in the majority the enema was of the greater value. Unless, however, the radiologist and surgeon worked hand in hand there were many traps which they were liable to fall into. In 30 per cent. of cases in which the barium enema was given there was a filling defect in the pelvic colon in the early stages. In one case in which there was a filling defect in the pelvic colon a study of the clinical aspect and the skiagram led to the diagnosis of carcinoma being made, but abdominal section revealed nothing more than a slight spasm at the lower end of the descending colon. One case appeared to be diverticulitis, but at the operation it was found to be generalised tuberculosis of the abdomen, with a mass in the pelvic colon.

Dr. ARTHUR F. HURST said the chief interest of the subject consisted in how far X rays helped in the early diagnosis of organic disease of the colon, and this interest would be stimulated by a comparison of different methods of examination. Recently he had had the benefit of team work. Chemical examination for occult blood after the patient had been carefully prepared by a hæmoglobin-free diet he had found to be of the greatest value of all, as he and his colleagues had never had a case of growth of the colon in which occult blood was absent. For conditions in the last 10 inches of bowel the sigmoidoscope was of great value, as it gave direct vision, but there were cases in which one was in doubt, and in these barium was a help. He considered that if there was a clinical history pointing to the possible presence of a growth, with constant occult blood, operation should be done, in spite of a negative X ray result. He showed skiagrams of a number of instructive cases.

Dr. ULYSSES WILLIAMS agreed that the barium meal was practically useless to show the position of disease in the colon, but an opaque enema was very useful. For revealing the appendix the meal should be made with buttermilk. He thought the operation of colopexy should be allowed to fall into oblivion: It did not matter where the colon was, as its position had no influence on the question of obstruction.

With regard to the normal position of the hepatic flexure, most books said it was at the tip of the eleventh costal cartilage, but in over 75 per cent. of normal healthy people he had found it to be, with the persons standing up, just at the crest of the ilium.

Mr. J. P. LOCKHART-MUMMERY spoke of the great improvement which had taken place in the diagnosis of colon disease in the last 12 years. An important question was as to how carcinoma of the colon was to be diagnosed when there was neither a palpable tumour nor obstruction; this was now accomplished in many cases in which neither of those helps was present. If diagnosed early, there were no more satisfactory operations for carcinoma than on those growths in the colon. He placed a higher value on the sigmoidoscope than did Dr. Hurst; if a patient had been properly prepared, his experience was that in the majority of cancer cases blood, or traces of it, could be found high up in the sigmoid, if there was no such condition as ulcerative colitis. He attached considerable importance to the history. X rays were a distinct help in the localisation of the growth, and he thought there would be increased accuracy in this in the future. Negative X ray evidence was useless. It was very important to repeat the opaque enema, to lessen the chance of error. By this means also diverticulitis could be either confirmed or excluded, a very important advance in the diagnosis of colon conditions.

Dr. W. H. COLDWELL considered that there was still much to be said in favour of the barium meal as a diagnostic aid in conjunction with the opaque enema in colon conditions, though the enema was the more valuable. He had a word to say about the inefficiency of some wash-outs before making an X ray examination, and the errors which the shadow of fæces left behind might give rise to. For detecting diverticulitis, of which he threw some skiagrams on the screen, he thought the opaque meal was as useful as the enema, and most patients preferred the meal, owing to its greater convenience.

Dr. S. C. SHANKS, speaking of the barium enema method, pointed out that there were certain "silent areas." The first was in the sigmoid. One loop of the sigmoid might be superimposed on another loop, and in that way the symptoms might be obscured. Another silent area was in the splenic flexure. And in the middle of the transverse colon there was often an area which an enema did not fill, it was the highest part, and the enema fell to the more dependent portions. Thus the part which looped over the ridge formed by the spinal column was not filled. He had seen such cases in which the skiagraphic picture resembled that of carcinoma. The barium-meal method was very valuable for investigating cases of chronic constipation; a large mass in the rectum settled the question. In 196 examinations he had made by barium enemata, he found 14 definite cases of diverticulitis (or 7 per cent.) and five doubtful ones. On separating hospital from private cases he found that in the former out of 150 examinations there were three cases of diverticulitis, or 2 per cent., while in 46 examinations of private patients there were 11 of diverticulitis, 24 per cent. That seemed to show that well-to-do people were more prone than others to this condition.

Mr. ASLETT BALDWIN related a case in which a man said he felt some inconvenience in the left side of the abdomen, and had some trouble with defæcation. Examination with the sigmoidoscope did not disclose blood or mucus, and the X ray report was that there was no filling defect nor obstruction. The man was put upon paraffin, with hopes for the best. Six weeks later he said he felt certain there was something abnormal present. Mr. Baldwin thought he could feel a lump, and some distension of the large intestine. He operated, and found a carcinoma in that situation. Another case he described was that of a man who had constipation for a week and had been treated with enemas. When seen, he complained of pain in the upper part of the abdomen on the left side, which was tender. A large mass could be felt on the right side of the abdomen. Washing out was done for a week, bringing away large flakes of lymph and mucus, and the sigmoidoscope showed streaks of blood. X ray examination showed the large intestine and transverse colon down in the pelvis, forming a very acute kink on the left side, and another on the right. There was no sign of any filling defect. The man was told to continue with paraffin, and though that was 14 years ago there was nothing further to report.

LONDON ASSOCIATION OF THE MEDICAL WOMEN'S FEDERATION.

A MEETING of this Association was held on May 8th, at the London School of Medicine for Women, to entertain the council members of the Medical Women's Federation. Demonstrations were given by various members of the staff of the School. In the physiology department Prof. Winifred Cullis demonstrated on the isolated mammalian heart, the action of certain drugs, and the production of arrhythmia by section of the A.-V. bundle. Miss M. Bond, M.Sc., communicated the results of her feeding experiments as to the content of vitamin A in bacon-fat, experiments undertaken in view of the fact that this fat is largely used in the dietary of children. Miss D. Woodman, M.Sc., showed slides, indicating that the feeding of rats with parathyroid exerts an inhibitory action on the thyroid. Mrs. Pillman Williams, M.B., demonstrated the methods of blood-group determinations. Microscopic preparations of fœtal tissues, demonstrated by Prof. M. F. Lucas Keene and Miss E. E. Hewer, D.Sc., were set out. These illustrated some of the points that have emerged in the course of their investigations regarding the correlation between the structural changes in the organs of the fœtus with physiological activity. Miss M. Waller, B.Sc., demonstrated emotive response to stimulation.

A demonstration was given by the National Institute of Industrial Psychology on various applications of psychological tests. Examples were shown of the best known varieties of both linguistic and performance—i.e., non-linguistic—intelligence tests. Some of the tests which are being used for vocational guidance and selection were also demonstrated. Specimens were shown of tests for the selection of engineers, weavers, clerks, and packers, all of which tests had been devised by the Institute at the request of various industrial firms. Some examples were on view of general tests for "manual dexterity" and "mechanical ability" which are being used in connexion with research into the best methods of vocational guidance.

The meeting was largely attended, over 150 members being present.

BRIGHTON AND SUSSEX MEDICO-CHIRURGICAL SOCIETY.

A MEETING of this Society was held on May 7th, Dr. E. F. MAYNARD, the President, being in the chair, when Mr. M. FITZMAURICE-KELLY read a paper on

Some Abdominal Emergencies in Children.

He remarked that the mortality associated with these conditions was to a great degree preventable, and that improvement in results was to be looked for mainly in the direction of earlier diagnosis and treatment. Dealing first with appendicitis, attention was called to the fact that, early in the attack, pain was often not localised, but was complained of across the abdomen. The importance of a band of hyperæsthesia above Poupart's ligament, as evidence that perforation had not yet taken place, and the information to be derived from rectal examination, were especially emphasised. Treatment consisted in immediate operation, delay being dangerous in young children. The right paramedian incision with internal displacement of the rectus was preferred in most cases; in those with definite localisation to the right iliac fossa, Mr. Fitzmaurice-Kelly preferred Battle's incision, closing it again with drainage of the rectus sheath and providing stab-drainage elsewhere if necessary. In the matter of drainage the surgeon was guided chiefly by his judgment in the individual case as to whether the peritoneum was capable of dealing with the exudate, but as a general rule drainage was more frequently required in diffuse peritonitis in children than in adults. In post-operative ileus the value of pituitary extract and eserine, in combination, was mentioned—in the worst cases jejunostomy was the only hope and should not be unduly delayed. Acute inflammation of Meckel's diverticulum was briefly mentioned, and the value of a paramedian incision in dealing with it pointed out. Pneumococcal peritonitis was not very rare among young girls of the poorer class. Many cases were mistaken for appendicitis; suggestive symptoms were the onset with symptoms of pelvic irritation—loose stools, painful and frequent micturition—and in acute cases severe toxæmia, with disproportionate increase of the respiration-rate. The acute cases did best with drainage, and the value of blood transfusion, as recommended by Fraser and McCartney, was mentioned. Referring to intussusception, Mr. Fitzmaurice-Kelly laid stress on the extreme gravity of the condition and the serious mortality—about 30 per cent.—associated with it. This was almost entirely due to a failure to recognise the urgency of the case at the outset. The clinical picture was very definite and strikingly uniform, and it was a serious error to delay treatment because a tumour could not be felt, or no blood was passed when the symptoms were otherwise suggestive. Three recent fatal cases were detailed, illustrating the sources and the dangers of delay. Pyloric stenosis in infants was, in the light of recent improvements in technique, claimed as a surgical emergency. The early diagnosis, and especially the differentiation of stenosis from pylorospasm, was discussed and Rammstedt's operation was described. In view of the fact that the mortality of cases operated on by this method was of the order of 30 per cent. against 80 per cent. in those treated medically, Mr. Fitzmaurice-Kelly contended that surgery should be invoked at the earliest possible moment after the diagnosis was definitely established.

Discussion and Reply.

The President recalled the days when appendicitis was a battle-ground between the physician and the surgeon. While conceding that the results were now better, he did not think that, as a result of surgical experience, we had advanced in certainty of diagnosis. He agreed that in pyloric stenosis in infants operation should be the rule.

Mr. L. A. Parry recalled a case of intussusception in which pain had been absent throughout and the symptoms were otherwise obscure. He did not find cutaneous hyperæsthesia of much value in practice, and regarded the physical signs of rigidity and tenderness on pressure as of more value than symptoms. He called attention to the difficulty of diagnosis between appendicitis and certain cases of ileo-cæcal tuberculosis, and was strongly in favour of immediate operation in appendicitis in children.

Mr. H. Nethersole Fletcher called attention to the virulence of cases of appendicitis starting with diarrhœa. In the matter of drainage he thought no risk should be taken, and that in cases of doubt a tube should be left in. He discussed the diagnosis of intussusception from gastro-intestinal catarrh with bloody stools in infants, and emphasised particularly the intermittency of the symptoms in the former.

Dr. H. M. Galt stated in regard to blood transfusion that, in such cases as he had tested, he had always found the blood of a parent and child compatible—but he recommended that the bloods should be tested in every case.

Mr. J. R. Griffith advocated a transverse incision outside the linea semilunaris, splitting the rectum sheath if more room were required, in cases of acute appendicitis. He mentioned a case of intestinal obstruction by a band following operation by the paramedian incision.

Mr. Fitzmaurice-Kelly, in reply, agreed that the diagnosis of appendicitis had not grown more exact, but contended that, in the presence of acute symptoms, an early exploration was the safest course, and the attempt to arrive at certitude might lead to a fatal delay. The same argument applied, with even greater force, to the case of intussusception, and he had never seen any harm come of a negative exploration.

EDINBURGH MEDICO-CHIRURGICAL SOCIETY.

A meeting of this Society was held on May 6th, Sir David Wallace, the President, being in the chair.

A communication was read by Dr. J. Stewart Fowler on

Erythrœdema.

Erythrœdema, he said, also known as the pink disease and in America as acrodynia, was a rare affection of infancy and early childhood. He had seen only four cases, but doubtless as the condition became better known it would be found more frequently. The symptoms were disconnected and cases might well be overlooked. The disease appeared to be more common in Australia and was originally described and named by Swift in 1911; later Jeffreys Wood, of Melbourne, published a further series of cases. Following on this the disease was described in America by Bilderback and Weston, who called it acrodynia, and shortly after Byfield reported it under the title of "a polyneuritic syndrome resembling pellagra acrodynia in very young children." In 1922 a few cases were recorded in England by Thursfield, Parkes Weber, and Patterson, while Feer, of Zurich, unaware that the disease had already been described, gave what is the most plausible explanation of the pathology when he named it "a peculiar neurosis of the vegetative nervous system in very young children." He also demonstrated the high blood pressure in the disease.

Dr. Fowler gave a description of four cases. All of these had been perfectly healthy up to the time of the onset of the disease and no hint to throw any light on the cause could be obtained.

The first case was of a girl, aged 2, who suddenly had an attack of feverishness with vomiting. Subsequently she had become cross and sleepless and had developed an itchy rash all over the body; the fingers and toes had become thickened, red and clammy. She was wasted, could not walk, and fell forward on her face when sitting in bed. On admission the child, who was very unhappy, was moderately nourished; the cheeks and nose were bright red. She lay with her face buried in a pillow and over her body were scattered patches of punctate erythema resembling a sweat rash. The hands and feet were swollen and livid red with thickened fingers and toes covered with sodden desquamated skin with a clammy feeling. They did not pit on pressure and the discoloration reached to an ill-defined margin just above the wrist. There was a leucocytosis of 12,000. An interesting point was great muscular hypotonia without any paralysis, the knee-jerks were diminished and sensibility to pin-pricks impaired, sleeplessness was a very prominent symptom, the appetite was poor and the child wasted; there was a good deal of cutaneous irritation, especially of the scalp, with the consequence that lumps of hair were pulled out. The temperature was not raised, but the pulse was always rapid, running from 120 to 150; the blood pressure was from 100 to 120. Soon after admission some teeth dropped out without previous change in the gums, but followed by a persistent stomatitis. After eight weeks in hospital she developed first an infection of a finger-nail and later a fatal general septicæmia.

The second case, similar to the first, occurred in a boy, aged 2, who was sent into hospital by his doctor on account of stomatitis and loss of teeth. The patient was markedly irritable, but sleeplessness was not a prominent symptom. The hands and feet were the same as in the last case, as also was the irritable skin rash with consequent loss of hair. The patient died a few hours after admission.

The third case was in a female infant of 1 year. The condition had been preceded by constipation and diarrhœa six weeks earlier. The same symptoms were present in this case as in the first, but were less severe in degree. The patient improved under treatment but was taken from hospital after five weeks by her parents, who were leaving the town.

The fourth case, in a boy of 13 months, was much more rapid than the previous cases. Three months before he came under medical care he had developed bright red rashes over the body and had become limp, but was not fretful, his nose and cheeks were red and his hands and feet red and swollen. His mother was in no way alarmed. Suddenly a rise of temperature ensued and death occurred in two days. The patient presented all the appearances of erythrœdema.

Summarising the condition, Dr. Fowler said that the age of those affected was usually from 9 months to 2 years, both sexes being equally liable. The disease usually lasted a year and did not tend to be fatal. Symptoms, in their order of diagnostic importance, were as follows: The hands and feet up to the wrists and ankles were first cold, dusky red, and swollen, later the skin desquamated and secondary septic infection was liable to occur. Profuse sweating was invariable with associated rashes of an itchy nature causing the child to scratch and pull its hair. The patients were thoroughly miserable; this was evidently part of the condition and not due entirely to the insomnia which was always present. The physiognomy was characteristic, the red nose and cheeks and the mouth gaping slightly from muscular atony. Loss of teeth was common and consequent persistent ulceration of the gums. Muscular atony was the chief nervous symptom and often was the first thing that drew the parent's attention to the disease. The rapid pulse without pyrexia and the high blood pressure were probably constant features. Anorexia and salivation were features of the condition and there might be albuminuria and pyuria. Nothing definite was known as to the cause or nature of the disease. A distant resemblance to pellagra had suggested a deficiency disease, but this, the speaker held, seemed unlikely. The evidence of its being an infective polyneuritis was faulty. Another suggestion was that it might be some upset of the vegetative nervous system, and many of the symptoms might be accounted for on this hypothesis.

Treatment was not satisfactory and should be directed to maintaining the nutrition in spite of the anorexia to prevent secondary infection, especially of the mouth, and to allay the itching by dusting powders. In one case large doses of atropine were given by Feer with benefit and calcium lactate in another.

Discussion.

Dr. **John Thomson** quoted two cases of the condition which were remarkable in that they both were seen within ten days and came from the same small town.

Dr. **Cranston Low** suggested that the primary condition might lie in septic absorption from the teeth. He thought that the condition of the hands and feet might be considered as exaggerated chilblains.

Dr. **Fowler**, in reply, said his four cases came from different places. He thought there might be a possible relationship to chilblains in the condition of the extremities, but he did not think the condition of the teeth primary as in his cases the condition was well established before the teeth became loose.

Dr. **Charles McNeil** read a communication on

Fibrosis of the Bronchi and Lungs in Childhood Following Broncho-Pneumonia.

When fibrosis had become established, he said, cough was a definite feature. In his cases cough was very troublesome in the morning on waking, lasting from half to one hour and leaving the child with little appetite for breakfast. Coughing also might occur during the night, waking the child. Cough also occurred on exertion, and vomiting frequently followed a paroxysm. Expectoration was not copious nor fœtid and in no case contained tubercle bacilli. Apart from the paroxysms there was a clearing of the throat, but this was not characteristic. Breathing was easy with occasional wheezing. The fibrosis was unilateral and usually left-sided with flattening on the affected side and loss of expansion. Dulness was found on percussion, but if extreme suggested pleural thickening or effusion, on auscultation the breathing was bronchial and might be faint or loud, it might become low-pitched, and always did so if bronchial dilatation occurred. Adventitious sounds were the rule and varied with the cough. Radiograms confirmed the physical findings with a uniform shadow on the affected side. Displacement of the heart could readily be seen. Bronchiectasis occurred in some cases, giving characteristic signs. Displacement of the heart was a cardinal sign in unilateral cases. The diaphragm also was pulled up with corresponding alteration of abdominal viscera. The standard of general health in the speaker's cases had been good; though exacerbations of cough had interfered with nutrition in some patients they had been rather prone to extension of pulmonary catarrh. Infectious diseases of childhood were borne well by the children. With regard to tuberculosis, Dr. McNeil said that in older descriptions confusion existed between fibrosis and fibroid tubercle, but after the discovery of the bacillus this had no longer troubled observers. He himself did not think that children suffering from fibrosis were any more prone to tuberculous infection than healthy children. Syphilis was excluded as a cause of fibrosis in the cases quoted. Certain cases showed marked symptoms, but without definite physical signs. X rays showed that the lungs were not quite clear, the change being bilateral. The symptoms in these cases were often very severe and the malnutrition marked.

A description of the pathology of the condition was given, emphasis being laid on the site in the lung where the interstitial inflammation began. Advanced fibrosis of the lungs with or without bronchiectasis was compatible not merely with survival to adult life, but even to old age with a fairly active working life. Ordinarily the prognosis was good, but absence of albuminuria and circulatory disturbance were to be looked on as reassuring signs. The disease did not appear to progress or retrogress with advancing age. Treatment was directed towards alleviating the bronchial catarrh and consequent cough, and an attempt was made to resolve the fibrosis. The patient was kept in bed with plenty of fresh air and sunshine, which caused the cough to abate quickly. Iodides and thyroid had been given but without definite results. Other symptoms are treated on appropriate lines. Case notes of six cases of definite unilateral cases and 12 incomplete cases were included, and the communication was illustrated by X rays and coloured photographs of complete lung sections.

Discussion and Reply.

Dr. **Fowler** suggested that the condition was largely pleural and quoted a case of his own which originated in a comparatively trifling pleural effusion. The pleura thickened and the characteristic symptoms developed. The X ray appearances could be accounted for in this way.

Dr. **W. T. Ritchie** referred to cases seen by him and spoke of the X ray appearance as a means of diagnosis from pulmonary tuberculosis.

Mr. **D. Guthrie** spoke of cases exactly as described being caused by a foreign body. He had been on the look-out for such a case, but did not think it as common as was supposed, nevertheless the X rays should be examined from this point of view.

Dr. **G. D. Mathewson** mentioned an aortic systolic murmur in a case examined by him which he thought due to mechanical action on the root vessels in the neck.

Dr. **McNeil**, in reply, said he thought that though in many cases the change might be pleural, in others the change was undoubtedly in the lung. The X ray showed more than the percussing finger could detect as the change lay deeply at the root of the lung. The diagnosis from tuberculosis was often difficult, especially in slight cases. A cutaneous tuberculin test was often helpful, as also was examination for the bacillus. He had not detected a foreign body, but it was possible that one might be masked in the denser shadows. In none of his cases had an aortic murmur been heard.

Mr. J. W. STRUTHERS showed a clinical case of

Endothelioma of the Dura Mater.

This case had been shown to the Society two years previously when an attempt had been made to remove the tumour. The attempt had not been successful, but had caused a disappearance of symptoms for a year, after which there was a return of symptoms. The patient was admitted to hospital recently, complaining of pain in the forehead. There was no sign of increased intracranial pressure. The tumour was removed and was peculiar in that, though small, it projected very little from the surface of the dura, but had the property of eating its way into the overlying bone. Prognosis was not good. Although a simple tumour in its original stages, there were considerable difficulties in removal, and it was likely to recur and spread along the base of the skull. Several microscopical preparations were shown.

Dr. HARVEY CUSHING (Boston, Mass.), Sir EDWARD SHARPEY-SCHAFER (Edinburgh), and Sir CHARLES SCOTT SHERRINGTON (Oxford) were elected honorary members of the Society. Prof. HENNING RONNE (Copenhagen) and Sir WILLIAM BOOG LEISHMAN were elected corresponding members.

ABERDEEN MEDICO-CHIRURGICAL SOCIETY.

AT a recent meeting of this Society, with Dr. JAMES CROMBIE, the Vice-President, in the chair, Mr. G. S. DAVIDSON read a paper on three cases of

Neonatal Hæmorrhage,

due to some of the rare causes. The first was an infant who was delivered by forceps and showed two bruises on the head caused by the pelvic outlet; these showed much clot, which was slow to form and adhered poorly to the scar. Circumcision was necessary on the third day after birth, and was followed by alarming hæmorrhage in the form of general oozing, which was finally arrested by the cautery. Recovery was uneventful, and it was considered that the child was a bleeder, though it was not possible to estimate the coagulation-time or the fragility of the clot. The second case was one of an infant who on the day after birth developed marked jaundice and on the next day intractable vomiting, at first curdled milk, and later bright red blood. In spite of treatment by rectal salines and intramuscular injection of serum the child died on the following day, and, post mortem, no possible source of the hæmorrhage could be discovered. Was this another bleeder? The third case was one of a feeble infant who died on the fourth day after birth as a result of hæmorrhage from the bowel. Here an abdominal tumour could be palpated and was diagnosed as an intussusception, but the child was too ill to permit operation. Post mortem, a spherical cyst of 3½ inches in diameter was found lying between the layers of the mesentery in its upper part, with a loop of bowel stretched tightly over it. Microscopic examination of the cyst wall showed it to be composed of a double layer of unstriped muscle lined on the outside by a thin layer of peritoneum, and on the inside by a mucous membrane resembling that of the neighbouring bowel, but somewhat atrophic. No communication was found between the lumen of the bowel and the cyst cavity.

This condition in such a young infant, Mr. Davidson said, was extremely rare. Well over 200 cases of mesenteric cyst had been reported, but of these only a few occurred in infants. He discussed the condition generally, and suggested a new classification:—

1. *False* (usually some history of trauma; walls of fibrous tissue with small round-celled infiltration, and with no epithelial lining).—(*a*) Serous; (*b*) chylous; (*c*) blood; (*d*) purulent; and (*e*) cystic malignant disease.

2. *True* (with an epithelial lining, unless a pressure atrophy has set in and obliterated it).—(*a*) Dermoid; (*b*) hydatid; (*c*) intestinal sequestrations: (1) mesenteric, (2) antimesenteric (Meckel's diverticulum), and (*d*) retroperitoneal sequestrations (usually Wolffian). Any of these true cysts might be complicated by a discharge into them of serum, chyle, blood, or pus.

At the same meeting Dr. EDWARD R. C. WALKER gave a paper on Pædiatric Experiences in America, in which he described the places he had visited and the work which had appealed to him during six months' post-graduate study in the United States.

Reports and Analytical Records.

ÆTHER PURISS, B.D.H.

(THE BRITISH DRUG HOUSES, LTD., CITY-ROAD, N. 1.)

THIS preparation is offered as a new and distinctive quality of absolute ethyl ether. We recently analysed a sample and reported a trace of peroxide, all other possible impurities being absent. A new sample was then sent to us when we found no reaction of peroxide, the preparation being a very pure form of ether. On inquiry it was ascertained that the first sample had been in our hands for six months, and, being overlooked, had received no protection against exposure to light or percolation of air through the cork. The new sample of ether gave no reaction for peroxide: it is an absolutely pure product.

"TABLOID" HEXAMINE AND METHYLENE-BLUE.

(BURROUGHS, WELLCOME AND CO., SNOW HILL BUILDINGS, LONDON, E.C. 1.)

This is a combination of 3 gr. of hexamine with ¼ gr. of methylene-blue. The therapeutic activity of hexamine is enhanced by the addition of methylene-blue, which possesses analgesic as well as antiseptic properties and is equally active in acid or alkaline urine. The combined product should be of value in a variety of biliary and genito-urinary conditions, before and after operations on the kidneys and prostate, in pyelitis, urethritis, and septic urinary conditions. "Tabloid" hexamine and methylene-blue is sugar-coated and the ingredients are, it need not be said, of a high standard of purity and reliability. The drug is issued in bottles of 25 and 100.

LANSOLETTES.

(MESSRS. ROBERTS AND CO., 76, NEW BOND-STREET, W.1.)

The conditions in which a non-irritating laxative is required are very prevalent, while it is notorious that the public abuse their internal economy by experiments in purgation. Liquid paraffin as a therapeutic agent has therefore to recommend it the facts that it is quite efficacious in suitable cases and does no harm by the establishment of an irritating habit. It is not everybody who might be benefited by taking liquid paraffin who finds the remedy agreeable, though there are on the market now brands that are practically tasteless. Messrs. Roberts and Co. have devised a combination of paraffin with agar-agar, and have made up tablets of this material containing 30 per cent. of lansoyl, a liquid paraffin with agar-agar in a chocolate basis. Thus an agreeable method of administering paraffin, especially to children, is provided, for it would take an expert to detect the presence of the lansoyl through the chocolate. The tablets, called lansolettes, are made up in boxes of 12, the adult dose being one or two tablets with or after the meals, the dosage for children being suit[illegible]re

Reviews and Notices of Books.

Lamarck-Darwinism and Dental Disease.

By Oran Starr, D.D.S., L.D.S. London: G. Routledge and Sons. 1925. Pp. 319. 21*s.*

A large part of this book is taken up with an elaborate study of the general principles of evolution. The author puts forward views which do not accord with much of the usual biological teaching in this country and attempts to show that dental disease cannot be explained except by regarding it as due to an infraction of those biological principles which, in his view, have governed the evolution of species. The prevention of dental disease can only become possible if we return to the function and environment of our primitive ancestors who were relatively free from caries of the teeth and pyorrhœa.

The author is a firm believer in the views of Lamarck that acquired characteristics are transmissible, and his argument completely depends on acceptance of this hypothesis. While he recognises the part played by natural selection, he considers that variations are purposeful and not haphazard. In his view evolution depends on an alteration in function induced by a gradual change in environment and represents an attempt of the organism to adapt itself to its surroundings. A teleological factor is thus implied though not specifically stated. This change in function precedes anatomical variation. Since the variations are transmitted they grow in snowball fashion and lead to the formation of new species. This is no new conception. The Neo-Lamarckian school has many adherents, but we imagine that there are few who would state the problem in terms so precise and emphatic as the author. Even those who believe that acquired tendencies may be inherited, would state their case in a way very different from Lamarck and would be far from accepting the views put forward in the famous "Philosophie Zoologique." Mr. Starr, however, is *plus royaliste que le roi*, and is fully prepared to accept the whole story, giraffe, wading birds, and all. To him "Lamarck-Darwinism" is more than an hypothesis; it is a gospel with infinite applications to the whole of life. In this volume he has used it to explain dental disease. But equally, his preliminary treatise on evolution might be an introduction to, and an explanation of, almost any form of vital activity, whether mental or physical. Indeed, if we mistake not, the author would regard the laws which he has framed as being not only an explanation of evolution, but also a new instrument of thought capable of wide application. Perhaps we have here the first instalment of a new synthetic philosophy. Mr. Starr postulates that the changes in any organism as well as the changes in environment must be gradual. He regards these as conditions so essential that they assume for him the sanctity of inviolable laws. Dental disease is due to infraction of these laws. Man's dental downfall began with the introduction of fire for cooking, for at once this introduced a sudden change in environment. The teeth being deprived of their birthright of vigorous mastication, became degenerate structures increasingly less able to resist disease as time went on. If we wish to recover our dental health we must revert to raw food, preferably of a vegetable character. Since man in his evolution did not pass through a flesh-eating stage, meat should not be eaten. Fish, however, is permissible, for man, like other mammals, passed through a piscine stage in which many fish were predatory and lived on other fish. To eat fish, therefore, is not a violation of natural law, since it is part of our natural dietetic heritage.

There is undoubtedly a germ of truth in the author's contention that there is an evolutionary factor in dental disease, and that the jaws and teeth are suffering from a gradual degeneration consequent on their relative disuse as compared with primitive man. It is conceivable that an alteration in our environment, which imposed a hard, detergent, and non-fermenting food in place of the soft, starchy aliment of the modern Englishman, might, in the course of time, bring back the massive jaws and strong teeth which the primitive savage even to-day possesses. It is an arguable thesis, however, that such a change might hardly be worth while; that the pappy foods of modern cookery are themselves a part of that form of evolution which we call Western civilisation. Not very good for us perhaps, and bringing with it a train of dental disease and abdominal trouble; yet so intimately bound up with the fabric of our lives that it would not be possible to revolutionise our dietetic environment without also interfering with a great many other things which we regard as essential to our comfort. While over-refined bread is open to criticism we confess that the alternative of raw wheat grains as a way of obtaining starch, which Mr. Starr recommends, leaves us without enthusiasm.

Mr. Starr's premises and conclusions are indeed hazardous speculations. Yet the book is well worth reading. We take evolution so much for granted that it is salutary to have a challenge flung at us which compels us to reconsider the nature of the mechanism by which we suppose that man has evolved from the amœba.

History of Medicine.

Medicine: an Historical Outline. By M. G. Seelig, M.D., Professor of Clinical Surgery in the Washington University School of Medicine. Baltimore: Williams and Wilkins Company; London: Baillière, Tindall and Cox. 1925. Pp. 287. 11*s.* 6*d.*

We are driven to preface our review with a quotation from Macaulay, which, *mutatis mutandis*, describes our frankly unfavourable impression of this book.

> "Nothing in the work has astonished us so much as the ignorance or carelessness of Mr. Croker with respect to facts and dates. . . . The notes absolutely swarm with mis-statements into which the editor never would have fallen if he had taken the slightest pains to investigate the truth of his assertions."

On p. 7 Prof. Seelig says: "In certain primitive races the so-called 'Mica' operation was done, this consisted in making a permanent urethral fistula in those males not considered worthy of propagating the race." The Mica operation has nothing to do with fitness for propagation, for it is performed on every male at the age of puberty and in no way prevents impregnation, as will be seen upon consultation of W. E. Roth's "Ethnological Studies Among the North-West Central Queensland Aborigines," p. 179. On p. 43 we find "The Arab hordes of the South destroyed the Eastern Empire and appropriated its capital, Constantinople, as their own." The destroyers of the Eastern Empire were Turks. On p. 49 we find a statement to the effect that it was Justinian who persecuted the Nestorians, led by the priest Nestorius, and so led to their seeking safety in Syria and Persia. As a matter of fact, it was the Emperor Zeno who was the cause of their flight first to Edessa and later to Persia, and Nestorius was not a priest but a bishop and patriarch of Constantinople. On p. 57 et seq., concerning Salerno, Prof. Seelig says that "it served both as type and a stimulus to the founding of other universities: Bologna in 1110, Oxford and Montpellier in 1180, Paris in 1205." These dates are not accepted, though we allow that to fix accurately a definite date for the foundations is difficult. Bologna, however, held her octocentenary in 1888; the earliest date at which Oxford can be called a university is 1167. There was a school of medicine at Montpellier in 1137, but the earliest allusion to a university is 1220. Paris became a university somewhere between 1150 and 1170, though there had been a school there in earlier days—a migration of alien scholars from which was probably the origin of Oxford. As to Salerno being the type and stimulus of other universities, nothing is more remarkable than the fact that despite the position of the *Salerno School of Medicine*, the university, so called, for it never was a regular university, had no influence whatever in the development of academic institutions. (Hastings Rashdall, "Universities of Europe in the Middle Ages," Vol. I., p. 82.) On p. 60 we find it stated that the *Regimen Sanitatis Salernitanum* consisted of "thousands of verses in hexameter." The number of lines in the poem varies in different codices, but the longest is 1239, the shortest is 370, and the mean of five versions is 710. On p. 100 Prof. Seelig says, in talking of the sixteenth century: "*The spirit of mediævalism soon debased* Plato's creed into what is known as Neoplatonism, a hodge-podge of cabalism, astrology, and alchemy." Can he ever have heard of Plotinus or of Porphyry? On p. 109 Harvey's famous dictum is, with a fine disregard for grammar, quoted as *Omnis vivum ex ovo*. On p. 111 the expression "the cups that cheer but not inebriate" is attributed to Dr. Johnson. On p. 131 James Douglas is described as having discovered "the peritoneal pouch behind the rectum." On p. 160 we find "Of all the pure and naked truths uttered by old Hippocrates, none was purer essence of truth than his famous *Populus vult decipi*." There may be some statement somewhere in the Hippocratic corpus having the same meaning, but we doubt it, and anyway Hippocrates did not know Latin. The phrase is generally said to have been coined by Cardinal Carafa (d. 1591), who was Papal Legate in France and who used the words in reference to the Parisians. On p. 185 we find the Edinburgh anatomist, Robert Knox, described as John Knox, and the Burke and Hare scandal as an instance of body-snatching, whereas it was murder.

The book is a reprint of eight lectures delivered in the Washington University School of Medicine, with the wish to "make a stimulating appeal to the mind of the student during his plastic medical school period." It is a pity that the work contains so many inaccuracies, for the idea and aim of the lectures are good, and we must give praise to the author for his quotation of Newman's type of a gentleman as given in the Scope and Nature of University Education, as applied to the physician. Dr. Garrison, whose excellent "History of Medicine" is a great contrast to the book now before us, furnishes a somewhat bittersweet foreword to Prof. Seelig's outline.

Pictor's Tract on the Treatment of the Renal Calculus, 1557. A Facsimile of the Original German Text from a Copy in the Library of Strasbourg University. With an English translation by CHARLES GREENE CUMSTON, M.D., Lecturer on the History of Medicine and Medical Philosophy in the University of Geneva. London: George Routledge and Sons, Ltd. 1925. Pp. 65. 5*s*.

George Pictor, the author of this little tract, was born at Villigen in the Black Forest in 1500. He was for some time a schoolmaster at Freiburg in Breisgau, but later studied medicine at the university of that city, where he also took his degree. The university offered him a professorial chair, which he refused in order to take the post of stipendiary physician at Einsisheim. He wrote various other medical works, a list of which is given by Dr. Cumston. The book now before us is a popular work, "written for everybody's use." It consists of eight chapters, the third of which tells how to differentiate between renal calculus and the colics. Though a good enough description of renal colic is given, but little help is supplied in differential diagnosis. Other chapters deal with prevention and cure. On the whole the advice is good considering the date of writing. As to prevention, Pictor sums up his advice as follows: "In brief, if stone in the kidney is to be avoided, a regular life must be led." The best part of the book is the dedication to "the Honourable and Learned Gallo Blet . . . my respected Master and Patron," in which Pictor reminds his patron of a reward given to a peasant who had offered him some water, by *Artaxerxes*. "For this act he honoured this peasant as his friend and even raised him to the rank of a nobleman. Should such a mark of esteem be accorded me, your Excellency would incite me to greater diligence in all circumstances. I would also recommend your Excellency to God and pray that He might accord you happiness and pleasure, and that you might be able to fill your office and govern for a long time to come with God's will and in collaboration with the honourable Dean John Wagnere and others." Surely an appeal to melt the heart of a stone!

TUMOURS AND CANCERS.

By HASTINGS GILFORD, F.R.C.S., formerly Hunterian Professor, Royal College of Surgeons of England. London: Selwyn and Blount, Ltd. 1925. Pp. 703. £2 2*s*.

THERE was a time when no pathologist of distinction could be considered to have placed the coping-stone on his life's work till he had formulated a cancer theory. Nowadays, the actual workers in this field are less prone to indulge in these speculations, and the broader consideration of the subject is more commonly undertaken by the onlookers who, after all, may see most of the game. Fortified in the belief that pedestrianism is not an angelic prerogative, Mr. Hastings Gilford having "flapped his wings, cranked his engines, and wound himself up" (p. 622), has proceeded to attack the cancer problem. He has obviously read widely, the list of authors quoted includes some 1600 names, and thought deeply on the subject, and has arrived at definite conclusions. He believes that the investigation of cancer has hitherto been on far too restricted lines. Needless to say, he has little faith in morbid anatomy and histology which he calls necrology (p. 621), and, admittedly, he is not alone in failing to appreciate that subtle distinction between the killed and the dead cell which is yet sufficiently strong to justify the experimental histologist, to himself at any rate, in his life's work. But experimental cancer research also makes little appeal to him. He says:

> "Engrafted neoplasms of mice are not much better than dolls or idols, as compared with living things and ideals. It is true that these neoplasms are alive, but they are in other respects no more than crude images of that which they are supposed to represent. Even the spontaneous neoplasms of mice, though true biological products, differ as widely from our neoplasms as do mice from men, so that no one would put any reliance upon evidence gathered from their study, unless it tallies with that already gathered from clinical experience and from general observations of the neoplasms of men" (p. 621).

In place of these restricted investigations, Mr. Gilford turns to biology, by which he means any science which has any bearing on the study of life. But inasmuch as he points to syphilis, malaria, enteric fever, and tuberculosis as examples of diseases which defied all efforts to understand them until their secret was revealed by methods of biology, pathologists and bacteriologists may yet take heart, encouraged, indeed, by the knowledge that their culture is deeper and broader than even they themselves supposed. Mr. Gilford sees disease as Nature's punishment—"Cancer is Nature's punishment for heinous biological transgressions. Of this we cannot be rid, until we are led through the paths of knowledge, of realisation of sin and of repentance." Looked at in this light, cancer is malignant but not malicious. Just as the scourge of the itch taught men to wash and, by compelling cleanliness, helped in the destruction of typhus, and enteric fever and cholera compelled us to cease drinking sewage (p. 625), so, Mr. Gilford holds, when its secrets are revealed, will cancer, too, make for our health and happiness. This biological conception of men rising on stepping-stones of their dead microbes to higher things is intriguing, but on this basis one might pause to lament the untimely disappearance of typhus fever, for its lesson might be equally valuable.

Put briefly, Mr. Gilford's doctrine is as follows. Cancer is essentially a disorder of development. The development of some cells may be arrested while that of others may be unduly hurried. In either case the cells are roused into regressive activity by stimuli, *when they become cancers—and the stimuli are the* evils of civilisation, all the old ones which have already been recognised by other authors, and many new ones including beef-tea, alcohol, and oral sepsis. The arguments on which this thesis is based are voluminous. Some of the author's conceptions are of interest, and some, no doubt, are just, but they are so often supported by simple assertions, by bad reasoning, and by debatable pathology that they fail to carry weight. For example, on p. 404, it is stated that dental sepsis hardly existed a century ago. "To attribute this" (oral sepsis) "to neglect of the tooth-brush is a serious slur on the dental profession, for never before has the tooth-brush been used as it is now, and the dentists of 50 years ago were both scarce and inefficient as compared with the dentists of to-day. Yet caries and oral sepsis, hardly recognised as causes of general disease 50 years ago, are to-day recognised as among the most important of all causes." Surely here the author confuses recognition with existence. On p. 162 we are told that alcohol produces fibrous degeneration of the liver and kidneys by bathing all the cells of the organ with diluted poison. Innumerable examples of this kind could be quoted. While we find that Mr. Gilford's book, founded, as it is, on a large range of reading and practical observation, has an interest for the student of malignant disease, we cannot feel that he has done much more than state in a general way the problem which still remains to be solved.

MANUAL OF PSYCHIATRY.

For the Medical Student and General Practitioner. By PAUL E. BOWERS, M.S., M.D., Examiner in Lunacy, State of California; Neuropsychiatrist, Los Angeles General Hospital. London and Philadelphia: W. B. Saunders Company, Ltd. 1925. Pp. 363. 18s.

Dr. Bowers has produced a book which is compact and comprehensive, and has laid adequate emphasis on the neurological aspect of the subject. The classification adopted is that outlined by the American Psychiatric Association, which appears to be in the nature of a list of mental disorders rather than a schematic arrangement. The book shows evidence of the practical experience of its author; the chapter on Methods of Examination is thorough and that on Treatment is practical. There are a number of tabulated lists—for instance, of the causes of convulsions and of the differential diagnosis of various conditions, which form a useful feature for the revision of knowledge. A long section is devoted to the criminal implications of insanity, each mental disease being discussed in relation to the particular variety of disordered a-social conduct which may arise. The matter in the book is ingeniously arranged and tabulated. The treatment of the subject is rather superficial, but as a handbook for the student the volume is quite adequate.

LANDSCAPE PAINTING.

By ADRIAN STOKES, R.A. London: Seeley Service and Co. 1925. Pp. 256. 15s.

IT is probable that this book, which is an addition to the New Art Library, makes a considerable appeal to medical men, as the interest taken by the profession in landscape painting appears to be widespread and spreading. Last year the modest exhibition held at the Royal Society of Medicine produced 60 medical exhibitors without exhausting the number of those who might well have shown their work; and, plastic work apart, of over 200 exhibits all but four or five fell generally under the head of landscapes.

Mr. Stokes's book is an excellent one. The reasoning is clear, the instruction simple and detailed, and the illustrations, where introduced, have a proper bearing on the text. He addresses himself mainly to workers in oil, but tempera work is fully noticed, and the remarks on water-colour painting are useful. The detailed description of the author's work on the beautiful tempera "Autumn in the Mountains," now *in the Tate Gallery, is an informing lesson.*

With one suggestion of a really practical teacher it is not easy wholly to agree, and we suggest that more than a rudimentary knowledge of perspective will often be found valuable in landscape painting. It is true that the landscape painter need not render angles and vanishing lines on any building that may come into his composition with the accuracy of an architect, but the knowledge of how to do this must surely give him considerable facility in dealing with the surfaces, elevations, and contours of a large landscape. Turner lectured to the Academy on perspective, and though it is recorded that his teaching was unintelligible, he certainly used his intimate knowledge in his own landscapes, while the valuable work on the subject in the New Art Library is written by an accomplished landscape painter.

Mr. Stokes's volume is calculated to induce medical men to develop any taste for painting that they may possess, and to introduce more of our colleagues to a pursuit for which much of their training must have fitted them, and in which they will find a rare source of pleasure.

The late Sir James Mackenzie's work on "Angina Pectoris" has been translated into French by Dr. E. Guilleaume, of Spa, and published in Paris by the Librairie Félix Alcan at the price of 25 francs.

Dr. Jamieson B. Hurry's "Vicious Circles in Disease" has been translated into Spanish from the third English edition by Dr. Diego Moxó y Queri, with a preface by Dr. Augusto Pi Suñer. The book is published by the Editorial Médica Mariano Roig, Premiá de Mar, Barcelona, Spain.

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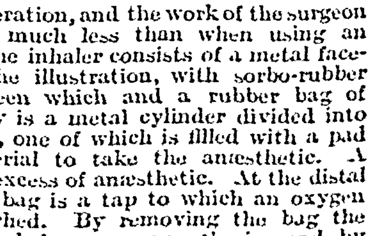

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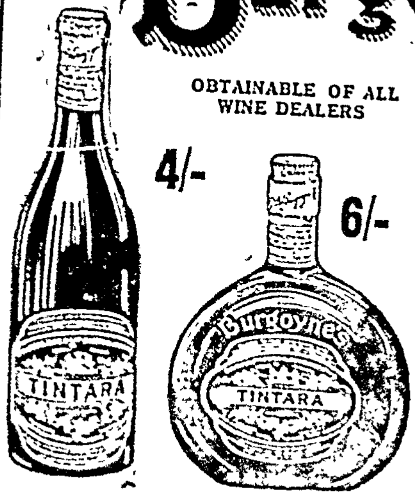

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THE LANCET.

LONDON: SATURDAY, MAY 23, 1925.

OPHTHALMIC BENEFIT UNDER THE INSURANCE ACT.

It is said that the number of medical practitioners trained in ophthalmic work is at present insufficient to undertake the treatment of the large numbers of insured patients who are likely to take advantage of the suggested ophthalmic benefit under the Insurance Acts. It is on this ground largely that opticians who already supply glasses in connexion with the so-called "optical benefit" provided by some of the larger approved societies are being proposed to carry on this work. In connexion with this subject, let us in the first place consider the relations of the public services to ophthalmology in the immediate past and at the present time.

1. *Education.*—The school system has been the pioneer agency in this respect and the establishment of school clinics all over the country in the hands of medical practitioners trained in ophthalmic work provides the nucleus of the required service.

2. *The Army.*—One of the most significant features of the medical services during the war was the organisation of an ophthalmic medical service. That it was possible to do this while continuing to provide for the needs of civilians at home is a fact that should be noted. The efficient coöperation of the optician was, of course, essential and will be freely acknowledged.

3. *Pensions Service.*—Following the war came the work of the Ministry of Pensions, and in this the same specialists who served the nation in the army have carried on their work until the main problems have been settled and little remains to be done in the ophthalmic branch of the Pensions Department.

4. *Insurance Service.*—Only a very few of the approved societies have made arrangements by which their members may obtain the advice of ophthalmic surgeons under the Insurance Acts. The term "optical benefit," in insurance regulations, refers to a special benefit which has been established by some of the larger societies by means of which patients who think they need spectacles are helped to obtain the services, not of an ophthalmic surgeon, but of a sight-testing optician. The opticians are moving to get this system extended and perpetuated. On the other hand, we have reason to believe that the Ministry of Health are finding a better way.

We do not deny that, although there are many so-called sight-testing opticians who are not competent to correct any but the simplest cases of refraction, there are others more competent. It is the declared object of their leaders, as expressed week by week in their journal, the *Optician*, to enforce a high standard of competence in this respect and to obtain for those opticians so qualified the hall-mark of State recognition, so that the anticipated general extension of the so-called optical benefit under the Insurance Acts may fall to their lot to administer. Does it not stand to reason that these sight-testing opticians, if they succeed, will establish themselves as a privileged body of practitioners without medical qualification but with the kudos of State recognition, who will tend more and more to monopolise the treatment of diseases of the eye? Such an ambition may be repudiated in the published writings of the opticians concerned, but actions speak louder than words. They have already established a "Refraction Hospital" in London where the use of the ophthalmoscope is taught, and they are taking steps to do the same in other cities. It may be said why, if they make themselves competent to deal with cases where nothing but an error of refraction is concerned without any involvement of the general health, should they not be recognised as such? The answer is twofold. In the first place, we may remark that medical benefit is granted for health insurance and should not be granted for objects in which the health of the insured individual cannot be considered involved. In the second place, defects in the ocular refraction are frequently closely connected with the individual's health; we may instance the connexion between astigmatism and headaches in young adults, and the occurrence of premature presbyopia as an early symptom of glaucoma. How often it happens that ocular symptoms afford a clue to local or general disease is made very clear on a perusal of Mr. PERCY FLEMMING's address in our present issue. But already there are signs that the ambition of the sight-testing optician is to become an ophthalmic consultant. "A fair proportion of sight-testing opticians," says a writer in the *Optician*, "are more skilled in the detection of ocular diseases than the majority of medical practitioners."[1] The argument is, of course, that the optician who discovers a disease with which he knows he is incompetent to deal will refer his patient for more highly skilled advice, but the gap between diagnosis and treatment is, after all, not so great in many cases as between ignorance and diagnosis. It would seem that if the opticians get their way they will in time become a body of privileged non-medical practitioners who will acquire vested interests in the treatment of insured patients. Is this to the public good?

And what is the alternative? It is said that the average general practitioner is not sufficiently often competent to deal with cases of refraction and that the number of competent ophthalmic specialists is so small that it would be impossible for them to deal with all the insured population. With the former statement we may to some extent agree, with the latter we do not. The appointment at many of the greater hospitals of special refraction assistants in addition to the clinical assistants who in the past dealt with a large part of this work; the continually growing number of education authorities who provide for refraction work (in 1920 the number was 280); the growth of ophthalmic private practice in the country—many specialists have consulting-rooms in several centres, so that it is probably true to say that there is no section of the country where a patient would sacrifice more than half-a-day's work in order to have his refraction tested and eyes examined by an ophthalmic surgeon; the number of those who have already answered the appeal recently issued by the British Medical Association and Ophthalmic Benefit Committee,[2] and have professed themselves willing and able to deal with these cases: all these circumstances combine to show that the problem which it is said cannot be solved except by calling in the aid of unqualified practitioners is not insoluble. The question has been raised, however, Are these considerable numbers of ophthalmic surgeons who are volunteering to do the required work at a fee of one guinea for each completed case of refraction competent to do the work? Dr. **Freeland Fergus**, of Glasgow, whose paper on Miners' Nystagmus is given on another page, has lately published a brochure entitled "What is an Eye Specialist?" which is gleefully quoted in the pages of the *Optician*, for Dr. **Fergus** throws doubt on the competence of many of those practitioners who claim to be ophthalmic specialists, chiefly on the ground that they have an insufficient knowledge of physical and physiological optics. With much of what he says we are in sympathy. Undoubtedly most qualified men and women need a course of at least two years' post-graduate intensive study before they can acquire the necessary familiarity with the problems with which they will be faced as ophthalmic specialists. At the same time we do not agree that the facility in the employment of mathematical formulæ which is called for in dealing with the more difficult problems of theoretical optics is an essential requirement. The important point is that some means must be found whereby the special competence of the men and women who may volunteer to do this work may be ensured. The idea that anyone possessing a medical qualification should start to learn his ophthalmic work by getting experience at the expense of insured patients is wholly indefensible. He must have had actual practice in hospitals of ophthalmic work and he must be prepared to afford evidence that he has already acquired the requisite skill in this branch of practice before he can be recognised by the State as competent for this special purpose. The proposals of the joint committee already published to ensure this object are a good beginning, and we understand that further machinery is being elaborated by means of which their intentions may be carried out. On the success with which this is done much may depend.

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[1] The Optician, March 20th.

[2] THE LANCET, Jan. 3rd, 1925.

HOMES OF RECOVERY.

The modern hospital with its special departments, its operating theatres and laboratories, is increasingly expensive to build and to maintain, and, as our diagnostic technique grows, the expense is likely rather to increase than diminish. It is therefore becoming the practice to maintain in the country or by the sea homes of recovery to which patients can be sent when it is no longer necessary for them to continue under treatment in the parent hospital, while they are not yet fit to be sent either to a convalescent home or to their own homes. During the last three or four years the financial position of voluntary hospitals has so greatly improved, their annual receipts and expenses have so nearly balanced, that the question of extension is again becoming practical. Nearly every voluntary hospital committee in the country has reported the need for more accommodation, and in the aggregate some thousands of additional hospital beds are said to be required in England and Wales. That being the case, the right use of the auxiliary hospital becomes a pressing issue. Of the value to parent hospitals of homes of recovery, auxiliary hospitals, country annexes, or whatever we may choose to call them, there has never been any reasonable doubt. What is good for the hospital should be good for the patient, but there is some difference of opinion as to the precise character of the advantage enjoyed by the hospital. At last week's conference of the Incorporated Association of Hospital Officers, reported on another page, there was an interesting discussion on the subject provoked by the paper read by Dr. F. N. **Kay Menzies** on the financial aspect of the auxiliary hospital. He was concerned to inquire into the extent to which the auxiliary can relieve the pressure upon the beds and consequently upon the finance of the parent institution; the facts and experiences which he marshalled had forced upon him the conclusions that when a patient has reached a certain stage of recovery his retention in the town hospital is uneconomic, and that substantial savings can be made by drafting him to a recovery branch. Some of Dr. **Menzies**'s critics, and those not the least authoritative, were inclined, for technical reasons, to be doubtful about the pecuniary savings—they were uneasily conscious of a flaw in his argument, but did not find it easy to put their finger upon it. Evidence was, however, not lacking that substantial economies can be, and are being, made by the extended use of homes of recovery.

It is obvious that strict finance is not the only side of the question. The object of a hospital is to cure its patients as surely and as quickly as possible, both for its own sake and for theirs, and that cure is more rapid in the cleaner air and more reposeful surroundings of the country is the merest truism. If, therefore, an auxiliary hospital failed to make any savings for the parent house, it would still abundantly justify its existence. When, however, it not only sends the patient back into the world some days earlier than would be possible if he remained in the town hospital, but saves sums of money which, in the aggregate, are imposing, there is little room left for argument. It is not every great hospital that can be moved from its central position—the Middlesex Hospital is an apposite case in point—but there is abundant need for more auxiliary hospitals.

What effect the more economic use of parent hospital beds will have on the staff remains a matter for consideration. It is stated by those who know that the medical and nursing staffs of London hospitals are already working nearly up to the breaking-point, and, if the stream of patients is to be more rapid, it will be necessary at all events to augment the staff of nurses. It will not be practicable to employ probationary nurses at an auxiliary hospital unless there is a resident medical officer, for the General Nursing Council would not recognise such employment in the prescribed training. This difficulty might be met by linking the nursing staff of the auxiliary with the parent hospital, probationers passing from one to the other, and, if necessary, by combining the annexes of various hospitals in order to have an auxiliary hospital large enough to require a resident medical officer. These are some of the questions on which more information is needed, but they do not invalidate the argument for providing more auxiliary hospitals. Economy and psychology both point to the importance of multiplying them.

SAFEGUARDING MEDICAL PRACTICE.

During the past year the risks to which doctors may be exposed in the work of their calling have been brought prominently before the medical profession through two cases which aroused a great deal of public interest, the Harnett case and the Bateman case, and it is to be hoped that the lesson contained in these two unfortunate occurrences will impress upon a still greater number of medical men the necessity for securing adequate protection for themselves through membership of one or other of the great medical defence societies.

The London and Counties Medical Protection Society held their annual meeting on May 20th at Victory House, Leicester-square, London, when an interesting and instructive report of the Society's work in 1924 was submitted by the council. The solicitors, Messrs. Le Brasseur and Oakley, stated that 1924 might be regarded as one of the heaviest litigious years in the annals of the Society, but of the eight cases which went for trial, excluding smaller county court cases, one cause only was lost. In the case of Harnett *v.* Bond and Adam, involving principles of vital importance to the medical profession generally, the whole of the expenses incurred by Dr. Adam, who was a member of the Society, were borne throughout by the Society. The outcome of this case decided the council to make provision by insurance for an unlimited amount so that a member could be completely indemnified under all circumstances, the limit of indemnity for defraying damages incurred by a member having previously been limited to £3000. (A similar step was also taken by the Medical Defence Union.) Apart from litigation, over 400 cases were dealt with by the Society's solicitors, who point out again how important it is that a member should not, through fear of delay, act on his or her own initiative, but should place the case from the first in the hands of the Society. The report, as usual, records a number of most interesting and instructive illustrations of difficulties encountered and overcome with the help of the Society, and covering all branches of medical life. Space alone prevents us publishing in these columns a larger selection than the following:—

A member had a claim made against him by the father of a child whose ear it was alleged had been damaged by the doctor's violence in quieting the child's struggles during the administration of an anæsthetic. Considerable difference of opinion arose amongst the experts consulted. Negotiations were commenced with a view to a settlement by way of a solatium and this was satisfactorily arranged, all charges against the member being unreservedly withdrawn.

A member without any request from him had had left at his house various articles connected with his dental profession. Demands for return of the goods or for payment were ignored by him, and as a result county court proceedings were commenced against him. The Society considered that this was a case which should be defended on behalf of the member in the interests of the profession in general, and, on the plaintiff's solicitors being written to informing them of the intention to defend, the proceedings were immediately abandoned.

A Scottish member of the Society was dismissed by his parish council from the appointment of parish medical officer, but the consent of the Scottish Board of Health had not been obtained. The case was fully considered and was reported to the Scottish Board of Health and an inquiry requested. Through the Society's Scottish agents the case was very fully investigated, a large number of witnesses were obtained on the member's behalf, and a full inquiry was held by the Scottish Board in a remote Scottish island, with a result that the member's dismissal was quashed and his reputation entirely upheld.

A member received a solicitor's letter accusing him of having disfigured a patient's face by negligent use of X rays for the removal of superfluous hair. After inquiry it was found that the disfigurement had been caused by various quack remedies which the patient had used and not by the X rays. The findings were sent to the patient's solicitor and no further communications were received.

A member received a letter from a solicitor demanding an apology and compensation for making "malicious and slanderous statements" about his client in the presence of a number of students. Inquiry showed that the patient had been seen by the member's deputy at a hospital [illegible] patients' department, where the case of the patient's disease was discussed and blood was taken for the Wassermann test. The solicitor was told that it was absurd to suggest that a doctor was actuated by malice [illegible] took steps to exclude the possibility of the patient's illness being due to a serious constitutional disease. No further action was taken.

With regard to medical secrecy, the council considers that it is the duty of a medical man *not* to disclose the nature or circumstances of the disease or illness from which his patient is suffering unless he is satisfied that the inquiry is made by a near relative who has a bona-fide obligation to maintain the patient or to assist in securing the comfort or the recovery of the patient. Such disclosure is not to be made in any case where the patient is able to consent and has not actually consented. This rule does not apply when there is a statutory obligation to disclose (this includes insanity and notifiable diseases), or where the disclosure is ordered by a competent court of law.

A member was called to a woman suffering from an obscure abdominal condition. The patient's husband, in the patient's presence, told the doctor that he (the husband) had gonorrhœa and had infected his wife. Some time later the doctor was asked by a solicitor to give evidence on behalf of the wife in divorce proceedings. Our member asked whether he ought to give evidence in the case. He was advised that, as the husband did not give the information about himself as a patient, and as his patient (the wife) wanted him to give evidence, he might properly do so.

In the present unsatisfactory state of the law, the Society is unable to do as much as could be wished in the way of suppressing unqualified practice. Where, however, the law provides a trustworthy remedy against unqualified practice, the Society is always ready—on the request of a member, backed by sufficient evidence—to put the law in motion.

A member asked whether he might properly send patients for treatment to a radiologist who did not possess a medical qualification. He stated that the radiologist was experienced and did work for a hospital. He was told *that he could not be held legally liable for negligence in having suggested to his patient that he should go to the radiologist, because he had good reason to think the radiologist was entirely competent.* He was, however, further advised that the General Medical Council would hold that a practitioner must either retain or denounce responsibility for the treatment of his patient. If he retains it he must supervise the treatment given on his direction by an unqualified person; if he definitely renounces it, the patient on his own responsibility may seek treatment where he will.

The Society issues a warning against laxity in granting medical certificates under the National Health Insurance Act, which is very seriously regarded by the General Medical Council and by the Ministry of Health. "In our experience," the solicitors state, "members, on the grounds of humanity and with a view to alleviating the lot of their poorer patients, are tempted to stretch a point in the patients' favour, and they should be warned against so doing as they are taking a risk which may seriously affect the whole of their professional career."

ROYAL COMMISSION ON NATIONAL HEALTH INSURANCE.—The [illegible] meeting of this Commission was held at the [illegible] Office, Whitehall, on [illegible], Lord Lawrence of Kingsgate in the chair. [illegible]

[illegible] ato [illegible] it is [illegible] atmeal, [illegible] contains [illegible] wheat, is [illegible] ance, or on [illegible] a definite [illegible] he calcium [illegible] ugh calcium [illegible] secondary [illegible] in order to [illegible] anti- [illegible] must.

Annotations.

"Ne quid nimis."

POPULATION.

The population of England about A.D. 1000 was something like 1½ millions: it slowly grew to nearly 9 millions in 1801, and then jumped up till it reached 38 millions in 1921. A hundred years ago Great Britain had twice the population of Ireland; now it has ten times as many people. Which, Mr. A. M. Carr-Saunders says in a recently published volume,[1] is a thing the like of which has, as far as is known, never happened before and will, as far as may be guessed, never happen again. The theoretically possible multiplication of mankind is infinitely great compared with the available area of land and its utmost imaginable fertility. Birth restriction, Mr. Carr-Saunders holds, is a necessity, and the customs of primitive peoples show that it has always been practised; the modern mind differs from the ancient only in asking for reasons instead of being content with religious or customary sanctions. The author is a classical Malthusian, and his argument centres round the proposition that the best number of people is that which gets the largest return out of collective human work and so achieves the highest general standard of material and spiritual life. Nomadic life fills the world with *n* persons per square mile, agriculture with 2*n* or 10*n*, according to its development, industrial concentration with 100*n* or 1000*n*. Whether any part of the world is over-populated or not depends therefore on the control which man can exert over his environment. That this will increase may be presumed; it appears likely that the population of this country is reaching, or has already reached, a stable condition; there is no need for alarm, but a great necessity that the situation should be studied and understood. Such is, briefly, the main thesis of a most excellent little book. The author states the questions and argues them very clearly and gives us one of the best half-crown's worth we have ever seen. Population, birth control, urbanisation are matters in which a great variety of people take, and ought to take, an interest; they are of national and international significance, and if such a book as this were widely read we should do away with some of the nonsense that is talked and printed about them. The book is short and in places necessarily dogmatic; it gives, however, an admirable survey which will incite the reader to go further and study some of the works given in the bibliography at the end, in which, curiously enough, there is no mention of the author's larger book "The Population Problem," published by the Clarendon Press in 1922. On one point only would we offer a suggestion. Mr. Carr-Saunders points out that nations desire to be big because they so add to their prestige, because they like as many people as possible to be of the same ideals and prejudices as themselves, and because they can more easily wave the big stick. He entirely omits the point which appeals strongly to the biologist, and especially the biometrician—that large populations are more likely than small ones to contain those exceptional variants on whom the progress and guidance of the world so much depend.

SIGNIFICANCE OF MANY TUBERCLE BACILLI IN THE SPUTUM.

It is generally assumed that the number of tubercle bacilli in the sputum is directly proportional to the severity of the disease. Another common belief is that the appearance of these bacilli varies with the severity of the disease, short and homogeneous bacilli being supposed to be indicative of severe disease, whereas granular and moniliform bacilli are supposed to be coughed up by patients whose disease is comparatively slight. To provide a statistical verification of these views, Dr. T. Stefani and Dr. J. Stefani,[1] of Montana, have compared the clinical with the bacteriological findings at their sanatorium in the period 1898–1923. Of the 1430 patients treated, only 781, or 55 per cent., were sputum-positive. There were 303 patients in whose sputum tubercle bacilli could not be found, and 346 who did not provide sputum for examination. In 70 per cent. of the 781 sputum-positive cases, the views referred to in the opening sentences of this annotation were confirmed. Cases in which the disease was slight were marked by a paucity of tubercle bacilli in the sputum, cases in which the disease was severe were marked by the great number of bacilli, and according as the patients became better or worse, the number of the bacilli in the sputum became less or greater. In 8 per cent. these correlations were reversed, and in the remaining 22 per cent. the dwindling or augmentation of the numbers of bacilli in the sputum bore no uniform relationship to the clinical course of the case. A comparison of the appearance of the bacilli with the course of the disease showed that in 60 per cent. of all the sputum-positive cases the orthodox teaching held good. When the disease was slight, most of the bacilli were granular, when it was severe, they were short and homogeneous, when the patient was getting better, granular bacilli replaced the homogeneous bacilli, and when the patient became worse homogeneous bacilli again appeared. In 18 per cent. these correlations were reversed, and in the remaining 22 per cent. no uniform parallel could be drawn. By combining the two factors—both the number and the appearance of the bacilli in the sputum—the authors of this interesting paper show that in as great a proportion as 80 per cent. a clue is given by the microscopic examination to the prognosis. Their painstaking research is confirmatory of views held for a long time. It is so much less exciting to confirm than to subvert old teachings that the authors are to be congratulated on having conducted investigations without that incentive to work which some of us find in the prospect of proving another in the wrong.

INSULIN AND INFECTION.

The article in our present issue by Dr. R. Carrasco-Formiguera, of Barcelona, on the amount of insulin required in the treatment of the surgical complications of diabetes and Dr. G. Graham's article on the relation of infection to diabetic coma in the current number of the *Quarterly Journal of Medicine*, both draw attention to the relation of sepsis to diabetes and of the necessity of giving an adequate amount of insulin. Dr. Carrasco-Formiguera points out that there is an impression abroad, for which he regards Dr. E. P. Joslin of Boston as partly responsible, that insulin is of little value in the presence of sepsis. He thinks that this is solely due to the use of an insufficient amount of insulin, although the dose given by Dr. Joslin—namely, 80 units in the day—would be considered a large dose under ordinary conditions. The amounts which Dr. Carrasco-Formiguera has used have been very large. Thus in one case in which a carbuncle was present on the neck, no less than 240 units were given on the first day although no food was taken. During the next week 200 units were given each day together with increasing amounts of food. Although the patient recovered in this case, it does not follow that a diabetic patient will always recover from another disease, however well the diabetic condition is handled with insulin When such large doses of insulin are being given it is advisable to have estimations of the blood-sugar made at least once a day if possible and to test the urine for sugar every two or three hours. In an emergency it is safe to give large doses of insulin provided that the urine is tested in this way and that insulin is not given when the urine contains no sugar, provided always that the symptoms and signs of insulin hypoglycæmia are clearly recognised and its treatment remembered. Dr. Graham also found it necessary to give large doses of insulin, although his maximum dose was only 160 units in the day. The point which he has made is the relation of an acute infection to the onset of diabetic coma. In seven out of nine cases of coma an acute infection was present, but was only obvious in two cases on admission to hospital. In two cases a definite pathological lesion would have been discovered at an autopsy if the patient had died in coma, while in three cases it is probable that no lesion would have been discovered, since the signs of an otitis media in one case and of an abscess in the antrum of Highmore in another did not appear until some days after the patients had recovered consciousness. These observations show the importance of searching for an acute infection whenever the patient shows diminished sugar tolerance or becomes comatose. Dr. Carrasco-Formiguera describes the beneficial effects which took place in the healing of a large wound following small doses of insulin, although the diabetic condition was obviously of the mildest. This is a point which needs further investigation, since insulin may prove to be of definite assistance to the surgeon in the treatment of chronic wounds.

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[1] Population. By A. M. Carr-Saunders. London: Oxford University Press. 1925. Pp. 111. 2s. 6d.

[1] Schweiz. Med. Woch., April 23rd, 1925.

THE TREATMENT OF CHRONIC DRUNKARDS.

THE treatment of the chronic drunkard is always a difficult problem and on the whole the solution in this country along the lines laid down by the Inebriates Acts of 1879-99 seems to be fairly satisfactory, particularly when compared with the state of affairs in France, for example. In that country the number of chronic drunkards is increasing very rapidly, and Prof. Maurice Letulle last year made a striking appeal for the provision of "drinkers' asylums,"[1] where these unfortunate creatures may be kept under restraint and suitably treated, for at present, unless the drunkard is definitely insane or unless he commits some criminal offence under the influence of drink, he is given no chance of placing himself under any restraining régime. In England there is likewise no system of compulsory restraint for the non-criminal drunkard, but there exist certain homes for inebriates where private patients are received as well as those who apply for admission under the Inebriates Act, and the forty-first annual report of Dalrymple House, Rickmansworth, which we have just received, illustrates effectively the beneficial results of restraint on these cases of alcoholic addiction. During the last year 59 patients were admitted to this home, 51 as private patients and eight under the Act. All were cases of alcoholic excess, and the absence of drug case admissions is attributed by the medical superintendent, Dr. F. S. D. Hogg, to the carrying out of the Dangerous Drug Act regulations, which he considers have so reduced the incidence of cases of habit-forming that further amendments to that Act are unnecessary. We referred in commenting on last year's report to the fact that the after-history of 1615 cases showed that 40 per cent. were doing well, and inquiries with regard to the results of treatment amongst those who have been discharged during the last few years show that 56 per cent. were definitely doing well, excluding those cases about which no information could be obtained. Dr. Hogg remarks upon the alteration in the symptoms of excessive alcoholism which has taken place within recent years, particularly in cases of even moderate spirit-drinking. Toxic symptoms, such as partial blindness, loss of memory, delusional states associated with early excitement and slow recovery, are more frequent than hitherto, and it is suggested that this is due to the adulteration of whisky with cheap deleterious alcohols by certain dealers being now a more frequent practice than before the war. It has, however, recently been pointed out[2] by Dr. R. Hunt, of the Harvard Medical School, that the toxicity of "boot-leg" liquors submitted for analysis was sufficiently accounted for by their content of ethyl alcohol. The beautiful situation of Dalrymple House, as shown by illustrations to this report, the indications that the social side receives careful attention, the provision of a workshop, &c., all emphasise that one of the important factors in the treatment of chronic alcoholism is environment. The other important factor, that of régime, doubtless receives due attention at the hands of those who have made a long study of this disorder, but it would be interesting to know if the hours of meals, for example, as set out in this report, are rigidly adhered to, for the 11 hours which appear to elapse between dinner and breakfast must feel long to those with a morbid craving.

THE FOOD VALUE OF CEREAL FOODS.

IT has long been known that rickets tends to develop most readily in children fed on diets which contain much carbohydrate, especially when the content of protein is also low. Feeding with condensed milk has been supposed to be particularly liable to lead to the development of rickets, and the main lines of treatment now recognised are to increase the amount of anti-rachitic vitamins, to give plenty of sunlight, and to bring about a proper balance between the protein and carbohydrate of the food. Investigations by Prof. E. Mellanby have shown that puppies develop rickets most readily when large amounts of bread are eaten, and subsequent experiments showed that the calcification of bone depends on the operation of several factors. These factors have been recently discussed by him in a Green book (No. 93 of the Medical Research Council Special Report Series), which was summarised in THE LANCET of April 11th, p. 789. In an investigation on the comparative influence of different cereals on the development of rickets, he has produced what appears to be incontrovertible evidence that the carbohydrate content of the diet is by no means the only factor concerned. First there is the confirmation of the view that when the anti-rachitic vitamin is deficient, increasing the cereal content of the diet leads to the production of far worse rickets. Next it is shown that the different cereals show great individual differences in their rickets-producing effects under such conditions, the least detrimental being wheat, the worst by far being oatmeal—a statement which, as our Scottish correspondent pointed out not long ago, has raised a storm in the porridge-bowl. Prof. Mellanby's experiments seem to show that these cereals exert a definite pro-rachitic influence on bone development, which influence can be wholly or in part antagonised by the anti-rachitic effect of vitamin A or sunlight. The anti-rachitic effect of cod-liver oil is far greater than that of other sources of vitamin A, though egg yolk and milk are also potent. So also are various calcium salts, especially the carbonate and phosphate, when taken with butter. It is claimed that the pro-rachitic effect of oatmeal, which is exhibited in spite of the fact that it contains much more calcium and phosphate than wheat, is due to the fact that it contains a substance, or on digestion yields a substance, which exerts a definite inhibitory effect on bone formation. The calcium content of the diet, provided there be enough calcium for bone formation, appears to be of secondary importance. The essential fact is that, in order to avoid rickets, the diet must show proper balance, there must be enough calcium and phosphorus, anti-rachitic vitamins must be present, and there must not be an excess of the cereal component of the diet, which would, by supplying a pro-rachitic factor, oppose the normal growth and formation of bone.

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[1] Le Progrès Civique, July 12th, 1924, p. 984.

[2] Jour. A.M.A., April 18th, 1925.

As Prof. Mellanby says, "there is a constant battle going on among dietetic elements as regards the calcification of bone, some substances stimulating and others preventing the process, and the ultimate structure of the bone is the outcome of the conflict."

The final word on this matter may not be said for a long time to come. Prof. Mellanby has performed a great amount of careful experimental work, which is worthy of serious consideration, and has raised issues of which we had not previously thought. But, on the other hand, it is certain that his results should be applied with caution to problems of human dietaries. The great amount of prominence which has been given to work on the vitamins, and to allied questions in the science of nutrition, largely on account of the conditions of restriction of choice which were imposed on us by the war, is in danger of leading to an exaggeration of their importance. Everyone who has worked on nutrition will admit that in a properly chosen diet the vitamins will look after themselves, and it is only under special circumstances that it becomes necessary to take special vitamin-containing foods. Without question the same applies to the regulation of diet in connexion with the prevention of rickets. While Prof. Mellanby's results have undoubtedly great scientific value, they are in danger of being misunderstood by lay people, many of whom take a great interest in diet. It must not be forgotten that the diets given to the puppies under experimental conditions are highly abnormal diets for such animals, and would not be chosen voluntarily by them. It might be suggested, for instance, that a diet of meat would probably lead to definite disturbances in the economy of a growing human infant, but it would be foolish to argue from such an experiment that meat is an unsuitable article of diet for puppies. Conclusions from these valuable and suggestive experiments should not, then, be pushed too far, and it must not be forgotten that Prof. Mellanby would certainly be the last to apply them unreservedly to human nutritional problems. The matter must be subjected to further careful investigation before we can say how far they can be applied.

THE ADMINISTRATION OF PURE OXYGEN.

It is not often that pure oxygen is administered to patients, but when such administration is required it has long been the custom to use the ordinary apparatus for nitrous oxide anæsthesia, substituting a cylinder of oxygen for one of gas. This method was used by Beddard and Pembrey[1] in their early work on the effect of oxygen. Its practical disadvantage as a routine method in the wards is that it requires the constant supervision of a nurse to regulate the flow of oxygen to keep the bag filled. The advantage of Haldane's apparatus, which came into use at the end of the war, was that the expiratory valve on the mask also acted as an air inspiratory valve, as required, so that if the supply of oxygen suddenly ran short the patient would breathe atmospheric air, and constant supervision to prevent suffocation was not necessary. Some oxygen is, of course, lost by this method. Dr. H. W. Davies and Dr. A. R. Gilchrist have recently in The Lancet[2] elaborated the older method by adding a flow metre to measure the oxygen, a reducing valve on the cylinder to steady the flow, and an adjustable opening to the mask, so that the concentration of oxygen in the air breathed can be varied. Such alterations, though presenting obvious advantages, may still lead to certain practical difficulties, and it would be interesting to know if they have been met. *Is constant supervision of the apparatus still necessary?* Reducing valves are very apt to leak, since the junction between valve and cylinder head has to stand the total internal pressure of the cylinder. Again, the Haldane reducing valve offers so much resistance that the last part of the oxygen of the cylinder often fails to escape. Have these facts been taken into account? While everyone who has studied the subject would agree with the authors that the method of giving oxygen by a funnel is useless, it does not necessarily follow that the extremely simple method of giving oxygen through a nasal catheter or a tube passed into the mouth should be condemned. No reducing valve is required, and the rate of flow can be gauged by the rate at which the oxygen bubbles through water in a bottle, though a flow meter is preferable. Such a method will not give pure oxygen and there will be some waste, but the inspired air will be considerably enriched and the patients benefited. When *pure* oxygen is required, the method of gas-bag with mask and valves in some form or other is essential. Perhaps the chief indication for pure oxygen is coal-gas poisoning, since the higher the concentration of oxygen the more readily will the CO be excreted from the body and the patient recover. Dr. Leonard Hill and Dr. Argyll Campbell, in their paper in the same issue of The Lancet, mention Dr. Haldane's observation that a mouse poisoned with CO can be kept alive in pure oxygen under two atmospheres of pressure. The technical difficulty of administering oxygen under pressure to patients is considerable, and fortunately in coal-gas poisoning pure oxygen under atmospheric pressure is good enough. However, the use of oxygen under increased pressure may be of advantage, since it has been pointed out that a perfect gas and oxygen anæsthesia with no cyanosis can only be obtained by such means. The reason is that such a high concentration of nitrous oxide is necessary for the anæsthesia, that the oxygen must be deficient if the ordinary atmospheric pressure is used, and visions have been conjured up of surgical operations being carried out in a steel chamber. An alternative method is to choose a gas with greater anæsthetic power, such as ethylene, so that perfect anæsthesia by means of ethylene and oxygen without oxygen-want may be obtained. Unfortunately, ethylene is highly inflammable, though there is every prospect that with proper precautions it may come into regular use for special cases.

CRIPPLING DUE TO FRACTURES: THE REMEDY.

The Lady Jones Memorial Lecture in Orthopædics in the University of Liverpool was delivered this year by Sir Robert Jones on May 12th before a large and representative audience of the medical profession. The lecturer chose as his subject Crippling Due to Fractures, its Prevention and the Remedy. After some preliminary remarks designed to emphasise the great frequency of preventable deformities after fractures, he dealt with the different types of disablement that might be present and the simple way in which most of them could be obviated. He instanced more particularly the serious results following badly treated fractures of the neck of the femur, the supracondylar region of the humerus, and the lower end of the fibula. He pointed out plainly that students were not adequately trained in the treatment of fractures and that this was often because the general surgeon had not the interest in nor the up-to-date knowledge of the treatment of fractures necessary if the subject was to find the place in his teaching which its importance to the man in practice demanded. To some extent this was inevitable, as the field of general surgery was now too large to be profitably traversed by any one man. The lecturer then entered a plea for a better thought-out and more efficient *scheme for the education of the student.* Every teaching hospital, he said, should have its special fracture department—usually, no doubt, in association with an existing orthopædic department. It should be under the charge of a man of consultant rank or if shared between several, an assistant of high standing should be appointed, whose specific duties should be the supervision of the department under his various chiefs. The department should include ward accommodation and out-patient rooms in close contact with the X ray and physiotherapy departments. A house surgeon and a permanent specially trained sister were, of course, essential. The lecturer held that attendance of senior students on at least a dozen demonstrations and classes for practical instruction should be compulsory. It was estimated that in a general hospital 10 per cent. of the beds should be set aside for the treatment of fractures. Should this be found impossible it was far better that hospital authorities should frankly disclaim responsibility. Wards could then be secured in Poor-law hospitals, and properly staffed and equipped these could be brought into vital connexion with the teaching schools.

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[1] A. P. Beddard and M. S. Pembrey: Brit. Med. Jour., 1908, ii., 43.

[2] The Lancet, May 2nd, 1925, p. 916.

THE LEICESTER PRIVATE HOSPITAL.

ON May 20th a private hospital was opened in the Regent-road, Leicester, following a largely attended reception, arranged by the Leicester Medical Society. The hospital is the gift of Mr. T. Fielding Johnson, formerly chairman of the Leicester Royal Infirmary. The object of the donor has been to make available for the use of private patients the advantages of a modern hospital, and the medical profession know well how exactly such institutions meet the present-day needs. The position of those who require hospital treatment, while they definitely cannot expect that their needs should be met by a charitable institution. though domestic circumstances preclude treatment at home, has hardly received the public attention that it deserves. At the relief of this position Mr. Johnson's generosity is directed, and he is to be much congratulated upon its sensible nature. The new institution has been built and equipped as far as possible with the facilities and conveniences of a voluntary hospital, and, the capital outlay having been found, it is intended to be managed on a self-supporting basis in regard to future maintenance and upkeep, there being accommodation for 50 patients, mostly in single rooms. All medical practitioners can recommend their patients, for whom there will be no restriction in the choice of doctor, and provision has been made for the reception of maternity cases as well as medical and surgical patients. We look forward to receiving an early report upon the working of this institution, for its success may prove a stimulus to communities as well as individual donors.

AN UNSUSPECTED EFFECT OF AIR POLLUTION.

IT is now well known that a large proportion of the water supplied by the Metropolitan Water Board is treated with a minute quantity of chlorine in order to facilitate bacterial purification, and the same method has been adopted by a considerable number of water authorities. The only objection to the process is that even when the chlorine is added in the proper proportion the water on occasion acquires an iodoform flavour and sometimes a distinct odour of this compound. The cause has been an entire mystery until an acute observer, Mr. B. A. Adams, F.C.S.,[1] noted that the odour and taste only occurred under certain meteorological conditions, and that rain-water collected under these conditions when chlorinated acquired the same characteristic odour and taste. His further researches revealed the fact that the taste and odour were due to a trace of phenol or an allied body, doubtlessly taken up from the smoke-contaminated atmosphere. With pure phenol he found that when added to a pure water in the proportion of one part to 1000 millions of the water, the taste was marked directly after adding the chlorine, but that a lady could detect 1 part in 2000 millions. These remarkable results have been more than confirmed. Experimenting with waters of different types it was found that practically every person could detect an iodoform odour when the phenol was 1 in 1000 millions of certain waters and some could detect a taste when the proportion was 1 in 5000 millions. The latter proportion represents 14 grs. of phenol in 1 million gallons of water, and it seems quite possible that water exposed to air in an open reservoir could take up this quantity from the atmosphere under certain conditions such as Mr. Adams found were necessary to cause the water to give the iodoform flavour when chlorinated. The nature of the body found capable of giving this flavour is uncertain, but its intensity is obvious when it is found by calculation that one five-millionth of a milligramme is capable of being detected by the taste. It is obvious that such tastes could be prevented in two ways, either by excluding the water from contact with air or by preventing atmospheric pollution from smoke. The one is in most cases possible, the other at the present practically impossible. but the fact above recorded may be of interest to the Meteorological Office Advisory Committee on Atmospheric Pollution. Smoke-contaminated air when bubbled through pure water causes it to give the iodoform reaction with chlorine, and this may suggest another method of determining the extent of the pollution of air by smoke.

BROADCASTING HEART SOUNDS.

UNDER the supervision of Dr. R. Lutembacher, who is well known in Paris as a heart specialist, the beats of one healthy and six diseased hearts were recently broadcasted from the Eiffel Tower station. Dr. Lutembacher has hopes that in the future by this means a doctor may be enabled to follow the progress of a patient, though he does not suggest that a complete diagnosis of a case previously unseen would be possible. He declares that by the aid of an amplifier a patient's heart beats are clearly audible over an ordinary telephone. A further valuable feature of such experiments is that they may bring the country doctor and the hospital specialist into closer touch. This experiment is said to be the first of a series. We recorded attempts on similar lines at Bristol and in Charlottenburg last year (THE LANCET, 1924, i., 861). Radio transmissions have since been carried out on several occasions by the Welsh National School of Medicine from the British Broadcasting Company's station in Cardiff. On one occasion two cases with well-marked cardiac bruits were correctly diagnosed by a medical man in Somerset. However, the aim of these transmissions was not so much to test the value of broadcasting heart sounds for the purpose of diagnosis of progress as to obtain information with regard to their magnification many hundreds of times by means of thermionic tubes. If a high degree of amplification without distortion is possible, then we have a new line of approach for investigating the nature of these sounds. It is possible that further light may be thrown upon the mechanism of their production or that vibrations hitherto undetected may be revealed. In exceptional circumstances the broadcasting of a patient's heart sounds might be of benefit, in that expert opinion not available at the bedside might be obtained from a distance. But it is probable that a short account of the patient's condition and symptoms would be more likely to bring help than the transmission of his heart sounds through the ether.

THE next session of the General Medical Council will commence at 2 P.M. on Tuesday, May 26th, when Sir Donald MacAlister, the President, will take the chair and give an address.

THE house and library of the Royal Society of Medicine will be closed on Whit-Monday, June 1st.

GRESHAM LECTURES.—A series of four lectures on the History of Medicine from the Earliest Times to the Mediæval Period, about A.D. 1400, will be delivered by Sir Robert Armstrong-Jones at Gresham College, Basinghall-street, London, E.C., on Tuesday, May 26th, Wednesday, May 27th, Thursday, May 28th, and Friday, May 29th (with lantern slides on this day), at 6 P.M.

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[1] The Medical Officer, March 21st and May 2nd, 1925.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CXXIII.—TREATMENT OF DEFORMITIES DUE TO INFANTILE RICKETS.

THE deformities due to infantile rickets commonly met with in practice and requiring treatment are the early stages of spinal curvature, genu valgum and varum, tibial curves, flat-foot, and, rarely, curvature of the bones of the upper extremity. Thoracic deformities require no treatment, and true rickety coxa vara is rare, though the possibility of the occurrence of this and of pelvic deformity is an additional reason for a period of recumbency during the treatment of the active disease.

General Treatment.

During the active period, whether deformity is present or not, the general scheme of treatment is relief from weight-bearing, without curtailment of muscular action, open air and sunlight, corrected diet, and cod-liver oil. This combination is best obtained in one of the many excellent country hospital homes or children's orthopædic hospitals now available.

The above indications can be met, under institutional conditions, by fastening the infant on his back to the cot with a light shoulder harness, which prevents him sitting up or rolling over, but leaves his limbs completely free. He lives in the open air wards with the lightest possible coverings consistent with adequate warmth in winter and at nights—completely in the open, with no coverings, in the day in summer. Helio-therapy is given to those who pigment well. The diet is fat-containing, modified according to age, and generally supplemented by cod-liver oil. The limbs are massaged, and deformities, if present, moulded, but not splinted. It is not advisable to divide or fracture bones during active rickets. Signs of active disease disappear, usually, in three months. The best working test of this is the return of the X ray appearances of the lower radial epiphyses to normal. The child is then allowed to sit and stand, and later, deformities, if persisting, are dealt with by one of the methods given below. Treatment on these lines prevents the formation of deformities and often results in spontaneous disappearance of those already present. When the child has to be treated at home a similar régime should be attempted. Artificial may be substituted for real sunlight. The mother is instructed to keep the child off his feet at least part of the day, the diet is corrected and supplemented, and cod-liver oil given. I am not in favour of splinting the legs to prevent walking, as this limits the valuable effect on metabolism of muscular contraction, and the possible prevention of some increase in deformity is not, in my opinion, sufficient compensation.

The treatment of the common deformities which have persisted in spite of, or arisen for lack of, treatment on general lines must now be considered.

Spinal Curvature.

This is usually (1) a kyphosis in the lower dorsal region, or (2) lateral curvature in the upper dorsal region and at the dorsi-lumbar junction. These are postural deformities, the latter caused by habitually carrying the child on the same arm—the former by sitting.

In kyphosis, immobilisation on the back, as described during the active stage, is sufficient to prevent further deformity. Later, and in the case of older children untreated in the early stages, a course of Swedish remedial exercises is given, and a light Jones brace may sometimes be beneficial till muscular control is improved. Kyphotic children should have school desks at which they can sit upright, and errors of refraction, especially myopia, should be corrected.

Lateral curvature is treated in the early active stages on a plaster bed holding the spine straight or slightly curved in the opposite direction. Subsequently, Swedish remedial exercises are given by a trained masseuse, and, if there is any tendency to relapse, a moulded leather jacket should be worn, made from a cast of the body in suspension, with the spine held curved in the opposite direction to the deformity. This is put on lying down in the morning and only removed for exercises and at night. In more severe cases of scoliosis, with fixed structural deformity, institutional treatment is indicated for a series of plaster jackets to obtain the best correction possible, followed by Swedish remedial exercises and wearing of a moulded leather support to prevent relapse.

Genu Valgum and Flat-Foot.

I mention these together as they are often associated and the early treatment of each is similar. Genu valgum is a deformity produced and increased in the rickety child by standing. Flat-foot is caused by failure of the flabby musculature of rickets to develop the arch of the foot: a process which occurs in the normal child on beginning to stand and walk. The former deformity tends always to produce or increase the latter by faulty weight transmission. A slight degree of genu valgum is common, especially in girls, and, if not associated with flat-foot or an in-toeing gait, requires no treatment. An in-toeing gait is caused by the patient's efforts to support his weakening arches with his invertor muscles by inverting his feet as he walks, and is often a sign of early genu valgum. If these symptoms are present, or the genu valgum more marked, the boots should be raised ¼ in. or ⅛ in. on the inner side of the sole and heel by thickening the leather or adding wedges. The heel counter should be very accurately fitted, and, in some cases, the inner side of the upper may be specially stiffened to prevent treading over. The mother is told *never* to allow the child to stand without the altered boots on. If this is necessary for a few minutes in bathroom or bedroom, the child should learn (as children do easily) to stand and walk on the outer sides of his feet. Simple exercises should be taught to children over 3. The best for flat-foot are (1) with toes pointing inwards, rising on tiptoe and coming down on outer sides of feet, (2) walking on outer sides of feet, (3) (seated) raising and bringing together the forepart of the feet till the big toes touch, keeping heels on the ground, and a few inches apart. For genu valgum—double knee-bending and stretching with the feet separated. Young children with genu valgum should lie down for two hours or so in the day, with a small firm cushion placed between the knees, and ankles and knees tied together with slings or large handkerchiefs. If these measures fail, or if the genu valgum is more advanced, with a separation of say 3 in. and over between the internal malleoli, when the knees are extended and the femoral condyles touching, the alternatives are (1) instrumentation, (2) osteotomy of the femur. Thomas's knock-knee iron is the best instrument. In applying it, the knee, in extension (but not hyper-extension), must be first bandaged to the posterior bar and then pulled over to the lateral bar (which should be set out a little) by means of a webbing strap and pad of felt over the internal condyle as far as the patient will tolerate. The correction is increased as tolerance is established. The instrument corrects efficiently in a year or two if well supervised, but causes much lateral mobility of the knee and muscular wasting if worn night and day. This may lead to relapse unless careful observation, altered boots, and exercises are continued for a lengthy period. I now prefer osteotomy. This should not be done under 4 years of age. The femur is divided with an osteotome for three-quarters of its thickness and the remainder fractured. It is done from the outer or inner side, just above the condyles, with the knee flexed and a firm sandbag behind it. The limb is fixed at once in plaster in slight varum, with hip and ankle included. The plaster may be removed in eight weeks, and weight-bearing, modified by crutches or sticks for the first week, allowed.

Flat-feet in older children, which are painful, or in which the arch cannot be restored by muscular effort, should be put in plaster in full inversion and dorsiflexion for a month and then treated by altered boots and exercises. If the flat-foot is rigid and the arch cannot be restored by manipulation, a preliminary wrenching under anæsthesia must be done until the foot is fully mobile and the arch can be restored. It is then put in plaster as above.

Genu Varum.

This is an outward bowing of the femoral and tibial shafts, causing wide separation of the extended knees when the feet are in apposition. It is not generally associated with flat-foot and tends to decrease with growth, so that treatment is not a matter of urgency. Should it persist after the age of 6, correction, if desired on cosmetic grounds, is obtained by osteotomies of the tibiæ first, followed by division of the femora later, if necessary.

Tibial Curvatures.

The commonest tibial curve (and the most characteristic deformity of rickets) is an antero-external bowing of the lower half or third of the shaft. This is a sitting deformity produced by the child squatting with legs crossed under the thighs. Less commonly the curve is anterior in the lower half, or, rarely, involving the whole shaft like congenital syphilis. Occasionally a tibial curve exactly compensates genu valgum and, functionally, these cases do not require correction. Straightening of the tibiæ for cosmetic reasons will have to be followed by correction of the unmasked genu valgum. Tibial curvature is an unsightly deformity and, if persistent after the age of 3 or 4, should be corrected.

The method of choice is *osteoclasis*. This is a simple procedure. Both tibiæ may be done at a sitting as shock is not great. Under full anæsthesia the point of maximum curvature of the tibia is applied to the narrow edge of a wooden wedge covered with a layer of wool. The weight of the body is suddenly thrown on to the hands, grasping the shaft of the tibia above and below the deformity, and the bone fractures with a crunching sound. A greenstick fracture is usually produced with bending or sometimes fracture of the fibula. Care must be taken in a low osteoclasis not to displace the lower tibial epiphysis by pressing on the foot. Occasionally the bone cannot be fractured by hand, in which case an osteoclast may be used, if available. Osteotomy should not be done immediately if manual osteoclasis fails, as the wound is liable to become infected owing to the preceding damage to the tissues. A firm bandage over wool should be applied and osteotomy deferred a week or so. After fracture the curve is corrected by moulding, but the line of the tibia should not be made too straight. There is normally a slight inward curve of the shaft. The leg is put in plaster immediately. This includes the knee, and the upper portion down to the fracture is allowed to harden slightly before the remainder, including the foot, is rapidly completed. This allows the final correction to be obtained by moulding before the lower portion sets. Any inward rotation of the lower fragment must be corrected at this point. The foot should not be dorsiflexed too much or an angulation of the fracture may be caused.

In older children, or when manual osteoclasis fails, the deformity is corrected by osteotomy. The leg is placed on a firm sandbag and the tibia partially divided with an osteotome subperiosteally, through a very small incision at the site of the deformity. Sometimes, especially in anterior curves, a wedge must be removed. The remaining bone is fractured, the small wound sutured, and the deformity corrected and put up in plaster as described.

Upper Extremity.

Deformities are rare but occur occasionally in the crawling stage of infancy. They are simple bends of the humerus or radius and ulna, and, if persistent after treatment in the active stage, can be corrected by osteoclasis and plaster fixation.

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Special Articles.

THE MILK-SUPPLY AND ITS IMPROVEMENT.

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I.—ESSENTIALS OF THE PRESENT POSITION.

THE present position can be summarised as follows:

1. The recent investigations on dietary essentials have increased the emphasis to be placed upon the value of milk as an article of food.

2. The consumption of milk per head of population in this country is very low. It is rather under one-third of a pint per head as compared with one pint in U.S.A.

3. The milk industry is capable of material increase and could be profitably expanded, with great advantage to the agricultural community, to meet the needs of an increased consumption.

4. While the medical profession as a whole is in favour of an increased consumption of fresh milk in the interests of the nutritional efficiency of the nation, its support cannot be given to an active campaign with this object because of its knowledge of the unsatisfactory quality of the present milk-supply.

5. The present milk-supply is unsatisfactory because, as regards the general supply: (*a*) No effective steps are taken to prevent human tuberculosis being acquired from milk derived from infected cows. (*b*) The conditions under which milk is produced fall a long way below what modern hygiene demands as necessary, and there is no effective control over the conditions of production. In consequence, ordinary market milk is heavily contaminated with bacteria, some of which are harmful and all undesirable. (*c*) The supervision of milk subsequent to production is inadequate, and many undesirable conditions exist.

6. While the distributory milk-trade is anxious to supply a better article it is unwilling, or unable, to control the quality of the milk which is supplied to it. In general it has improved its own methods, but these, in the main, consist in preserving an initially heavily bacterially contaminated article by artificial means, pasteurisation being largely employed.

7. Control over pasteurisation methods employed to preserve the saleability of contaminated milk is non-existent. Pasteurisation may effect its immediate object of prolonging the "life" of the milk without destroying pathogenic organisms.

8. There is no inducement to the individual milk producer to supply a better quality milk unless he has a local market and can earn a reputation for the quality of his milk. The great bulk of the milk produced receives the same price, clean or dirty.

9. The present conditions of milk production and distribution entail unnecessary losses upon the milk-trade, which in the aggregate are very considerable. If these could be measured a clean pure milk would probably be found to be advisable as a business proposition, apart from any health factors.

10. The existing legal powers to control and ensure a pure milk-supply are extremely unsatisfactory and wholly inadequate.

11. There is insufficient care of milk in the homes of the consumers.

12. The scheme of graded milks established under the Milk and Dairies (Amendment) Act, 1922, while of considerable educative influence, touches but the fringe of the problem and cannot be regarded as satisfying the needs of a pure milk-supply.

Most of these postulates are so well recognised that detailed consideration is unnecessary; others will require discussion to secure their acceptance.

Importance of Milk as a Food.

It is unnecessary to discuss the dietetic value of milk or the importance of its vitamins. In connexion with vitamins in milk, recent investigations have shown that the vitamin content of milk is materially influenced by the food given to and the fresh-air conditions of the cows. A good milk requires, as one of its essentials, production under conditions which do not impair the vitamin content.

Consumption of Milk.

Between 1871 and 1911[1] the population of Great Britain increased by 60 per cent., but the number of cows and heifers by only 40 per cent. The total weight of dairy produce imported during this period increased from 2·5 cwt. to 8·5 cwt., an increase of 235 per cent. The same report gives the average daily consumption of milk per head for Great Britain as 0·25 pint liquid milk. This varied from 0·1 pint in Inverness to 0·31 pint for London.

In a coal-mining district (Rhondda U.D.) Dr. J. D. Jenkins[2] (the M.O.H.) gives the figures of milk consumption per head per day from 1915 to 1923 as 0·15 (1915), 0·14, 0·15, 0·105, 0·167, 0·167, 0·152, 0·165, 0·175 (1923). These figures show a progressive increase, but it is slight. Even the highest figure is less than one-fifth of a pint per head per day, and in nine years the increase is only one-fortieth of a pint per head.

There are no statistics that I am aware of dealing with the actual consumption in individual families, particularly in rural areas. In view of the importance of milk as a food I have instituted some inquiries in different villages in Somerset (a milk-producing county), limiting the investigations to families which comprise children at public elementary schools. The results are summarised in Table I.

TABLE I.—*Milk Consumption.*

Parish.	No. of families investigated.	No. of inmates.		Total weekly consump. in pts.	Average consump. per head in pints.		No. of families, with consumption :		Highest and lowest consump. per head per week.
		14 and under.	All.		Per week.	Per day.	Above the mean.	Below the mean.	
A	30	95	173	378	2·18	0·31	16	14	4·7—0·8
B	30	102	169	435	2·59	0·37	17	13	7·0—0·87
C	10	21	49	163	3·32	0·47	6	4	5·6—1·1
D*	47	92	221	674	3·05	0·44	24	23	7·0—1·0
E	29	72	166	416	2·50	0·36	16	13	5·25—0·9
F	14	50	82	228	2·78	0·40	6	8	7·0—1·4
G	10	32	57	124	2·17	0·31	4	6	3·5—0·9
T'tal	170	464	917	2418	2·61	0·38	—	—	— —

* D is a quite small town mainly occupied with gloving (population about 1000), the others are rural villages.

All the inquiries were made in January, 1925. The average consumption per head per day was 0·38 pint or practically one-third of a pint per person. This is above the calculated average for England generally, but these families all include children. Practically no condensed or dried milks were being used, so no allowance is necessary for this. Unfortunately, also, it was frequently the families with the most children who obtained the least milk. Table II. gives particulars of the number of children in the families consuming one-third or less than one-third of a pint per head per day.

Table II. shows that 42·4 per cent. of the families consumed one-third or less milk per head per day. The group of 170 families investigated included 45 with four or more children, and in 32 of these, or 71·7 per cent., the available milk per head per day was one-third or less pints. The larger the number of children and the greater the need of milk the less they received. The low average consumption in village A was connected with the fact that 11 of the 30 families contained four or more children, and in ten of these the milk consumption was less than one-third of a pint per head per day. Inquiries showed that there was no difficulty in obtaining milk, although a few of the children objected to drink it.

TABLE II.

Parish.	Number of children 14 and under in family.					All.	Per cent. of families investigated.
	1	2	3	4	over 4		
A ..	0	4	3	5	5	17	56·7
B ..	1	1	2	2	7	13	43·3
C ..	0	0	0	2	0	2	20·0
D ..	6	2	3	2	1	14	29·8
E ..	4	2	4	0	3	13	44·8
F ..	1	0	2	2	2	7	50·0
G ..	0	4	1	1	0	6	60·0
Total ..	12	13	15	14	18	72	42·4

The two essential causes of the low consumption are a failure to appreciate the importance of milk as a food and the cost, many mothers stating they were unable to afford more. The price paid was 2½*d.* to 3*d.* a pint in winter.

Increase in Milk Production in this Country.

Another Government report[3] states that in 1922 the total production of milk in Great Britain was estimated to be 1320 million gallons and the consumption of liquid milk at 650 to 700 million gallons, while the quantity of milk imported as represented by milk products is estimated at 1570 million gallons. In 1922 the estimated total consumption of milk and milk products was computed at 2890 million gallons, of which home production furnished 1320 million gallons, or approximately only 46 per cent. of the whole. There is a need for an increased production of milk to meet an increased use of milk which should be stimulated and to produce in this country what is imported from abroad. Agricultural authorities are of opinion that a very great increase of milk production is practicable.

The Dilemma of the Medical Profession.

If the consumption of milk is to be increased the support of the medical profession must be enlisted. At present the individual practitioner is in a dilemma. On the one hand, he knows the importance of milk as a food, particularly for children and for the sick under his care, and he favours a general increase in its consumption. On the other hand, he is well aware that most of it is produced under grossly insanitary conditions yielding a milk laden with living bacteria, some of which are definitely pathogenic. How can he recommend such a fluid in its raw condition? Again, he knows that boiled and heated milk is not the equal of raw pure milk. He is driven to accept the lesser evil and advocate milk only when boiled or efficiently pasteurised, but it is difficult and nearly impossible to secure his active coöperation as an apostle for its widespread consumption while conditions remain as at present. Graded milks form such an inconsiderable quantity of the total supply that he is not helped much thereby. I have felt the dilemma in lecturing upon milk, in connexion with health weeks, &c., having to devote the first part of my lecture to an exposition of the advantages of milk as a food and the latter half to an explanation of the necessity for a pure supply and the dangers of ordinary milk.

Tuberculosis from Milk.

It will be unnecessary, in view of the extensive literature on the subject, to do more than try and assess the extent of tuberculosis in man of bovine origin. The subject is discussed in detail by Cobbett,[4] while a very valuable paper by Stanley Griffith[5] gives a clear statement of the present-day position. Tables III. and IV., summarised by Gauvain from Griffith's paper, are of great interest.

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[1] Final Report of the Committee on the Production and Distribution of Milk, 1919.

[2] Annual Report M.O.H. Rhondda U.D.C., 1923.

[3] Departmental Committee on Distribution and Prices of Agricultural Produce. Interim Report on Milk and Milk Products, 1923.

[4] The Causes of Tuberculosis, 1917. Cambridge University Press.

[5] Bovine Tuberculosis in Relation to Man. Proceedings National Milk Conference, 1922, p. 71.

TABLE III.

—	No. of cases.	Human.	Bovine.	Percentage bovine.
Cervical gland tuberculosis	116	62	54	46·5
Bone and joint tuberculosis in England ..	476	389	87	18·3
Bone and joint tuberculosis in Scotland ..	28	20	8	28·6
Lupus	126	62	64	50·8
Scrofuloderma	52	32	20	38·4
Genito-urinary	17	14	3	17·6
Tuberculous meningitis (cerebro-spinal fluid) ..	12	10	2	16·6
Pulmonary tuberculosis ..	229	226	3	1·31
Post-mortem material from 223 children under 12 years of age dying from any cause whatever—*L.G.B. series*:				
Cultures obtained in ..	113	93	20	17·7
Royal Commission series (fatal tuberculous cases)	46	27	19	41·3
	1215	935	280	23

TABLE IV.

—	Under 10 years of age.			Over 10 years of age.		
	No. of cases.	Human.	Bovine.	No. of cases.	Human.	Bovine.
Cervical gland tuberculosis ..	47	14	33 (70·2) %	69	48	21 (30·4) %
Bone and joint:						
England	288	217	71 (24·6)	188	172	16 (8·5)
Scotland	22	14	8 (36·3)	6	6	0 (—)
Lupus	89	40	49 (55)	37	22	15 (40·5)
Total	446	285	161 (36)	300	248	52 (17·3)

It is possible from these figures to arrive at an estimate of the number of deaths due to bovine tuberculosis. Cobbett has made the calculation, and concludes that at least 6 per cent. of tuberculosis deaths are of bovine origin, or rather over 3000 deaths a year. As Sir Henry Gauvain points out, this is probably an under-estimate and will be found to be higher when larger numbers of cases of abdominal and generalised tuberculosis are classified according to the type of bacillus. In addition to the cases, which end in death, there is the immense number of cases with less fatal lesions, many of which are severely affected for years, while a good many die from other diseases. At least 50 per cent. of the gland tuberculosis cases are of bovine origin, cases which are not fatal as such.

Nearly all these bovine cases are of milk origin and we must agree with Gauvain: "There can be no question that bovine tuberculosis is a very fruitful source of disease in this country. No form of food-supply is the direct or indirect cause of more deaths, and for no food product is so little done to prevent infection as in the milk-supply of this country."

It is difficult to arrive at comprehensive facts as to the extent of tuberculosis amongst milk cows and the degree to which milking herds contain animals shedding tubercle bacilli into the milk-supply. Local reports as to the presence of tubercle bacilli in milk do not supply much grounds for believing that there is any material reduction, although facts suggest that in some areas there is a diminution. Probably there is about 1 per cent. of milking cows with tuberculous udders, and about 12–15 per cent. of mixed milk samples show living tubercle bacilli.

Considerable campaigns are now being launched and a great deal of money is, and will be, expended on dealing with cripples and other children suffering from tuberculosis. It may be philanthropy, but do not let us call it business or preventive medicine, to allow unchecked the manufacture of large numbers of cases of tuberculosis of bovine origin and then spend huge sums to try and restore these unhappy victims to a condition of health of which they should never have been deprived. To give but one example. In Shropshire their orthopaedic work is a model to other counties, and during 1923 the sum of £4434 was paid by the county council for the treatment of surgical cases of tuberculosis. If we take the above figures for bone and joint tuberculosis as 20 per cent. bovine and apply this to the whole, £887 was spent on the treatment of a few of the cases of bovine tuberculosis, an expenditure which could be more advantageously employed in eradicating the sources of infection.

(To be continued.)

PROCEEDINGS OF THE ROYAL COMMISSION ON NATIONAL HEALTH INSURANCE.*

(Continued from p. 1046.)

EVIDENCE OF THE INSURANCE COMMITTEES.

EVIDENCE was given on behalf of the Federation Committee of the English, Scottish, and Welsh Associations of Insurance Committees by the Rev. W. D. Yoward, Mr. Edwin Potts, Mr. W. N. Marshall, and Mr. F. Llewellyn Jones (App. XXXVI. and Q. 12606–13142). Separate statements were put in by the two last named on behalf of the Scottish Association (App. XXXVII. and Q. 13143–13208), and on behalf of the Welsh Association (App. XXXVIII. and Q. 13209–13270).

This evidence is largely devoted to an account of the way in which medical benefit is administered by the insurance committees and contains many of the provisions of the acts and regulations which need not be reproduced here. It is stated that insurance committees have taken a very deep interest in their work and have displayed an active interest in all matters pertaining to national health, including a large share in health propaganda.

The staffs of committees were, at the outset, largely recruited from the offices of local authorities, and their earlier experience has proved most useful. The Associations claim that they should be directly represented on behalf of insurance committees on any body or conference negotiating the terms of service with the doctors. They consider that they should be brought into consultation from the commencement. The right of any medical practitioner to inclusion on the panel list should, they suggest, be restricted and an inquiry made before admission to the service where the insurance committee make representations to that effect. The doctors' representatives themselves would, it is said, welcome this as tending to improve the service. Amongst other things which would be the subject of inquiry would be the adequacy of the surgery and waiting-room accommodation.

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* In previous articles the proceedings of the Commission were reported under the following headings: Introductory Note; The Scope of the Insurance Scheme (see THE LANCET, Jan. 31st, pp. 247–8); The Provision of Medical Benefit (Feb. 7th, pp. 301–3; Feb. 14th, pp. 355-6; Feb. 21st, pp. 403–5); Financial Provisions of the Act (Feb. 28th, pp. 454–7); Medical Certification and the Regional Medical Staff (March 7th, pp. 508–9); The Approved Societies and the Money Benefits (March 14th, pp. 561–5; March 21st, pp. 623–4); Evidence of the Hearts of Oak Society (March 28th, pp. 677–9); Evidence of the National Conference of Industrial Assurance Approved Societies and of the Manchester Unity Approved Society (April 4th, pp. 731–3); Evidence of Independent Order of Rechabites, of Rational Association Friendly Society, and of Miners' Societies (April 11th, pp. 784–6; April 18th, p. 839); Evidence of Mr. Alban Gordon (April 18th, pp. 839–40); Evidence of Joint Committee of Approved Societies, of Stock Exchange and Lloyds' Health Insurance Societies, and of Group of Catholic Approved Societies (April 25th, pp. 889–91); Evidence of the National Insurance Beneficent Society (May 2nd, pp. 943–4); Evidence of the British Medical Association (May 9th, pp. 993–5); Evidence of the British Dental Association and other Dental Organisations (May 16th, pp. 1044–6).

References to the paragraphs in the printed statements issued as appendices to the reports of the oral evidence are given thus; "App. X. 69," and references to the oral evidence thus—Q. 1369.

In regard to medical certification, it was suggested that the issue of recommendations for treatment benefit—e.g., dental treatment—should no longer be restricted to occasions on which a certificate of incapacity for work is given. Penalties recommended by the insurance committees should not be varied by the Ministry without the insurance committees being afforded an opportunity of stating their views. Other alterations of machinery proposed included a simplification of the arrangements in connexion with the transfer of practices and an extension of the duties of regional medical officers in consultation in the earlier stages of illness.

With regard to administration, the Federation saw no necessity for the insurance medical service being placed in the hands of an authority which provides no part of the cost. An extension of the service to the dependants of insured persons would not, in itself, strengthen the argument for unification with the local authority services.

(Q. 13011.) Effective coördination and unity may be secured by coöperation between these bodies, strengthened by interlocking or reciprocal representation and by joint sub-committees, including arrangements for joint action by officers of these bodies.

Extensions of the Medical Service.

Insurance committees are of the opinion that the various treatment benefits should become primary benefits and be administered by the insurance committees. There should be a complete domiciliary service developed in the following order of priority: (*a*) Consultants and specialists; (*b*) diagnostic and treatment facilities (laboratories and clinics, &c.); (*c*) nursing; (*d*) dental treatment; (*e*) ophthalmic treatment; (*f*) additional appliances; (*g*) maternity services; (*h*) massage. Beyond these there should be provided hospital and convalescent home treatment, medical services for aged persons, and an extension to the dependants of insured persons.

The Federation were not prepared to give any estimate as to the cost of these proposals. They felt that there was money available in the scheme for some, at least, of these services. As regards an increased contribution to cover any part of the services, the witnesses said (Q. 13053): "We have not anything definite to put forward on that." Mr. Marshall added that in Scotland they were definitely against any increase in the contribution at the present time.

The separate Scottish evidence included the statement (Q. 13219) that if the health functions of insurance committees were transferred to County Councils, those bodies would not be able to cope with the work, as they are already overburdened. In regard to the present insurance medical service, it is stated (App. XXXVII., 26) that the local medical committees take a broad and, indeed, a generous view of the duties of the doctor to his patient.

Other statements of interest are as follows: (46) The Association is not satisfied that the mileage grant for Scotland is sufficient. (60) The Association believes that without in any way impairing efficiency, considerable economies in the supply of drugs to insured persons might be effected.

The Welsh evidence contains the suggestion that the Commission should be invited to consider the advisability or otherwise of the approval of new institutions for administering medical benefit. Evidence definitely recommending this course was put forward by the Glamorgan Insurance Committee in Appendix XXXIX.

Separate evidence was laid before the Commission by the Coventry Insurance Committee (App. XXXIII. and Q. 12237–12451), which included the suggestion that, with a more fully developed medical service, insurance committees might become related to the local authority more or less on the lines of the Education Committee.

The Cheshire Insurance Committee gave evidence (App. XXXIV. and Q. 12452–12659) on the detailed administrative work of a county insurance committee, the way in which the service might be extended, and the application to a county area of an attendance system of remunerating insurance practitioners.

The Leicestershire Insurance Committee (App. XXXV. and Q. 12660–12695) gave evidence especially on the extent to which the Insurance Committee had conducted health propaganda by means of posters, articles in the local press, appeals to the clergy and Sunday schools to coöperate during Health Week, and illustrated health lectures to school-children. They suggested that insurance committees could be especially useful in this direction, as they are directly concerned in the provision of medical treatment of the industrial population.

HOSPITAL OFFICERS' ASSOCIATION.

ANNUAL CONGRESS.

THE second annual Congress of the Incorporated Association of Hospital Officers was held on Friday last at St. Thomas's Hospital. After a brief address of welcome by the Hon. Sir Arthur Stanley, the congress was opened with equally commendable brevity by the President of the Association, Mr. W. H. Harper, house governor and secretary of the Wolverhampton and Staffordshire General Hospital.

The Rôle of the Auxiliary Hospital.

Viscount Hambleden then took the chair for the morning session, and Dr. F. N. Kay Menzies, Director-General of Hospital and Medical Services for the Joint Council of the Order of St. John of Jerusalem and the British Red Cross Society, read a paper on The Auxiliary Hospital: its Financial Aspect and the Extent to which it can Relieve Pressure upon Parent Hospital Beds, by himself and Mr. R. H. P. Orde. Their paper appears at substantial length on p. 1115 of this issue.

The discussion was opened by Mr. E. W. Morris, house governor of the London Hospital. While agreeing with the need for country annexes, he thought that insufficient attention had been given to matters other than financial which give them their value. Patients did much better in the country, but they always stayed much longer there than in the parent hospital. The weekly cost of a country bed was probably less than half the town cost, and there was the collateral advantage that pupil probationers could be taken in a women's annexe at the age of 19 and afterwards drafted for training into the parent hospital. On the other hand, a probationer who has entered at 21 and is being trained in the town cannot be sent to the annexe because all annexes have not a resident medical officer, and unless they have the General Nursing Council will not recognise them as training schools for nurses. Some of the town hospitals might combine to have an annexe large enough for a resident medical officer; otherwise the annexe must be run entirely by fully-trained nurses, which would be expensive. At the same time he felt that from the financial point of view there was a flaw in Dr. Menzies' calculations, though he could not put his finger on it.

Dr. H. L. Eason, superintendent of Guy's Hospital, agreed that every hospital ought to have many more auxiliary homes, but made the point that, even with a high daily average of unoccupied beds, the medical staffs of the London hospitals were very near the breaking point, and that if patients were got through the hospitals more rapidly that strain would be increased and it would be necessary to augment the nursing staffs. Whatever the other advantages of country annexes the idea that they would save money was illusory. To this opinion Mr. A. G. E. Sanctuary, administrator of the Radcliffe Infirmary at Oxford, opposed the fact that about £1 per week per patient was saved to that institution by sending patients to its home of recovery. He suggested that the cottage hospitals might be used as annexes. Mr. Frank G. Hazell, secretary of Manchester Royal Infirmary, and Mr. G. G. Panter, secretary of the Royal Northern Hospital, bore witness to similar experience. Mr. Arthur Griffiths, secretary of the East Suffolk Hospital, Ipswich, said that it had been found at that institution that although the recovery hospital did not reduce costs, it expedited the complete recovery of the patient. The President declared that his auxiliary hospital not only reduced costs but enabled patients to return home three or four days earlier. Lady Wilberforce, hon. secretary of Marlow Cottage Hospital, thought that the auxiliaries should help in the training of probationers at an earlier age. Mr. Orde, co-author of the paper, having claimed that the financial advantages of auxiliary hospitals were admitted by the most practical economists, Lord Hambleden drew attention to a nursing difficulty. A large proportion of the cases sent to auxiliary hospitals are surgical, and it is not easy to find medical cases in sufficient number for the training of probationers to the satisfaction of the General Nursing Council. In his reply on the discussion, Dr. Eason thought that this difficulty might be removed by linking the nursing staff of the auxiliary with the parent hospital, probationers passing from the one to the other.

Contributory Schemes.

At the afternoon session, at which Dr. Eason presided, Mr. A. G. E. Sanctuary read a paper on the Effect of Hospital Savings and Contributory Schemes on Voluntary Contributions. Contributory schemes meant financial stability and consequent efficiency, and he argued that the intelligent philanthropist will more readily support an efficient institution which is holding its own financially than one which is struggling along on the verge of bankruptcy, and that consequently contributory schemes were likely to increase rather than diminish help from subscribers. He believed, indeed, that contributory schemes had saved the voluntary system from extinction; there were many hospitals that would have failed but for the establishment of these schemes.

Mr. F. B. Elliot, general secretary of the Hospital Saving Association, considered that Mr. Sanctuary had completely proved his case. The problem was peculiarly difficult in London owing to the multiplicity of hospitals and to their never having made it their business to work together. Mr. Elliot gave some significant figures of the progress of the Hospital Saving Association during the two years of its existence. In its second six months its workmen contributors expanded from 33,000 to 62,000; in March last they numbered 135,000, and were now close upon 150,000. In the first six months to January, 1924, the income was at the rate of £16,000 a year; in the first three months of 1925 it was at the rate of £76,000, and in April of £87,000. In reply to questions, Mr. Elliot stated that the working expenses amounted to rather more than 10 per cent., paid out of a guarantee fund. In the course of a useful discussion the question was raised whether hospitals benefiting by contributory schemes entered into a contract of service with the contributors, and Dr. Eason replied that there was no such contract either implied or in fact, and there was no certainty of admission. Patients presenting vouchers from the Hospital Saving Association were, however, exempt from all almoner's inquiries and made no payment to the hospital. The system had not, as some people had feared, flooded the out-patients' departments.

Mr. Harper reminded the conference that the Wolverhampton contributory scheme had been in existence for nearly half a century, and said that in the last ten years the amount raised by it had enormously increased. He had no belief in joint hospitals' councils and was strongly of opinion that contributory schemes ought to be worked from inside each hospital.

At the close of the congress the members were the guests at tea on the terrace of the House of Commons of Mr. George Harney, M.P., and Captain Styles, M.P., and in the evening they dined together at the Holborn Restaurant.

ROYAL SOCIETY CONVERSAZIONE.

SCIENTIFIC EXHIBITS.

A CONVERSAZIONE was held at the Royal Society on the evening of May 13th. A number of demonstrations was given and many exhibits of great interest and instruction were shown.

The exhibit of pure fused quartz ware by the Thermal Syndicate, Ltd., included the atmospheric type of mercury-vapour lamp for medical and research work, hypodermic syringes for flame sterilisation, and some optical quality fused quartz lenses.

The Cambridge Instrument Co., Ltd., showed some typical applications of the thermal conductivity method of gas analysis. The method depends essentially on the varying heat conductivity of different gases, this change being registered as a change in the rate of heat loss from a platinum spiral electrically heated and placed in the gas to be examined. Any alteration in the composition of the gas mixture, for example, oxygen and carbon dioxide, is reflected as a change of resistance of the wire provided that there is an appreciable difference in the thermal conductivities of the two gases, and this is the case with the two gases mentioned. The change in resistance may be conveniently recorded by means of a sensitive galvanometer. The principle was used originally in the Shakespear katharometer for the analysis of flue gases, and has recently been applied to biological work. For example, Prof. A. V. Hill has made use of this method for determining the percentage of CO_2 in the alveolar air. The measurement of the CO_2 production of a single fly was demonstrated on this occasion by the Cambridge Instrument Co. The percentage of CO_2 rose fairly rapidly to a value of about 11 per cent., thereafter remaining constant at that figure for a comparatively long interval. Unfortunately, the thermal conductivities of oxygen and nitrogen are so nearly identical that so far it has not been found possible to apply the method to the measurement of oxygen consumption.

Some early wireless apparatus was shown by the Science Museum. The exhibit included instruments used by Sir Oliver Lodge at a lecture to the Royal Institution in June, 1894, in experiments with Hertzian waves, on which occasion wireless signals were transmitted through walls a distance of some 20 yards; also part of the first tuned coupled circuit apparatus of Senatore Marconi.

The Director, Rothamsted Experimental Station, demonstrated two lines of research in connexion with *Bacillus radicicola*, the nodule organism infecting leguminous plants. The organism passes in the soil at certain periods into an active flagellated stage, and it was found that the appearance of this stage could be promoted by inoculating the soil with the organisms suspended in milk and that this effect was increased by the addition of phosphate. The application of these principles has resulted in increased nodule formation and a correspondingly increased crop yield. It was found, further, that the development of the nodules was very sensitive to the presence of boron in the growth medium. If this element were absent the nodule was either poorly developed or entirely lacking, and in the former case the organisms failed to fix atmospheric nitrogen in appreciable quantities and became parasitic on the plant cells.

Attention was directed by Dr. O. Rosenheim and Prof. J. C. Drummond to a colour reaction for vitamin A. The reaction consists essentially in the development of a brilliant ultramarine colour when a dehydrating agent, such as arsenic chloride or trichloracetic acid, is added to an oil containing the vitamin. The colour is sufficiently permanent to permit of a colorimetric estimation of the relative amount of vitamin A present. The discovery that the intensity of the reaction runs parallel to the vitamin-A content of cod-liver oils and butter as tested by the usual method of biological assay brings the method at once into extreme prominence and utility. It is interesting to record that a colour reaction, though a different and transient one, is also given by the addition to cholesterol of any one of the dehydrating agents used in the detection and estimation of vitamin A, and that yet another colour is given by irradiated cholesterol. It will be remembered that vitamin A is found exclusively in the unsaponifiable fraction of cod-liver oil.

Dr. H. W. Dudley and Dr. Rosenheim showed some crystals of spermine phosphate. This substance, however, has been shown not to be specific to semen, but to be capable of isolation from almost all animal tissues. It has further been detected in yeast. Naturally a substance with such a wide distribution in animal tissues may well be suspected of performing some definite and important function. Its molecular formula has been shown to be $C_{10}H_{26}N_4$, but its structure has not yet been determined.

The results of some interesting tissue culture experiments were given by the Imperial Cancer Research Fund. It was demonstrated that fresh tissue—kidney in this instance—failed to grow until an extract of damaged tissue, preferably homologous, was added to the culture. Possibly an explanation of regeneration in the neighbourhood of damaged tissue may lie hidden in this experimental fact. No differentiation in structure, however, occurs until the growth is inoculated with a pure culture of fibroblasts, and then it soon becomes possible to discern cubule formation in the formerly homogeneous cellular mass. The dependence of differentiation of structure on the presence of an adequate amount of growing connective tissue was further shown in a convincing manner in the case of epithelial tissue.

An electrical stethoscope exhibited by the International Western Electric Company should prove of great value for diagnostic and teaching purposes. On the one hand, by making use of electrical filters, waves of certain frequencies can be excluded or retained at will, thus making it possible to concentrate on a particular element in the sound, and on the other, a means is presented by which a large number of persons, up to 600, can listen simultaneously to an individual patient.

In addition, many other demonstrations and exhibits of less obvious bearing on the medical sciences served to make the evening one of extreme interest and lasting instruction.

VIENNA.

(FROM OUR OWN CORRESPONDENT.)

Accidents in Vienna.

FOR the past 15 years there has existed in our city a special accident ward, which is really simply a surgical clinic for accident cases. It is managed by both surgical clinics of the General Hospital (Prof. Eiselsberg and Prof. Hochenegg), and the clinics have now published a report of the work done in this ward since its inception. In the preface Prof. Eiselsberg declares that the "accident service" in Vienna has attained a degree of fitness which makes it a model for all other places of a similar position. At any hour of the day or night a group of surgeons and nurses is always prepared to deal with cases of injury brought to the hospital, mostly by the street ambulances. All the modern and most up-to-date appliances are in daily use: portable X ray outfits, apparatus for transfusion of blood, anæsthesia apparatus, and so forth. As regards the results obtained, it may be stated that within the period mentioned above 24 cases of injury of the heart have been operated upon, 16 stab-wound cases, and 8 gunshot-wound cases, of which 6 of the former were saved and 4 of the latter. In 168 cases laparotomy had to be performed on account of injuries to the abdomen. A remarkable lesson is taught by the figures pertaining to the accidents caused by the traffic. The increase of the city life, of the number of vehicles, the ever-increasing employment of inexperienced workers at machines in factories has more than trebled the number of injuries in ten years; whilst the deterioration of public morals, the disappearance of the sense of responsibility, the mental instability ascribed to the war, to alcohol, and to poverty has also contributed largely towards the increase of injuries. Alcohol especially is a potent danger. In 1913 only 20 cases due to liquor were brought to the ward; in 1924, in the first ten months, the number was over 100. Motor-cars have increased in ten years by 25 per cent. only in Vienna, but the accidents caused by them have gone up by 500 per cent.! This compares very unfavourably with the tramcars, by which means over 458 millions were transported in one year with only 87 accidents; and even this figure is hardly higher than ten years ago, with a much smaller number of passengers then. The effect of alcohol is easily discernible in the sudden rise of cases on Sunday nights and Saturdays, when the week's wages are dissolved in this dangerous liquid.

Injury to the Fœtus Caused by X Rays.

Prof. J. Zappert demonstrated recently, at a meeting of the Vienna Medical Society, a baby with peculiar features. The weight of the baby was under 2 kg. at birth and at 7 weeks it was 2½ kg., the body-length being 50 cm. At the age of 7 months it weighed only 4½ kg., was very quiet, and showed a decided lack of intelligence, marked microcephalic appearance and some degree of mongolism. The right eye was very malformed, the left small, but capable of seeing. This condition of mongoloid idiocy has been noted in three cases (observed by Abels, Aschenheim, and Zappert) where the mothers had been treated with X rays during their pregnancy. The mother of the demonstrated patient, a woman of 23 years, who had suffered since girlhood from dysmenorrhœa, was irradiated on Dec. 18th, 1923, for the first time, and again eight days later (receiving 6 units of Holzknecht). Four weeks later she was found to be pregnant, and the child was born July 15th, 1924. In the other cases recorded elsewhere, the symptoms of microphthalmia and microcephaly were also combined. Although cases are known where pregnant women have been exposed to X rays without any resulting injury to the fœtus, experiments on animals have shown that irradiation does cause sterility or "unviable" offspring. Artificial abortion in human beings could not be obtained, however, by these means. As regards the mechanism of the injury, it must be noted that the exposure to the X rays of the mother in Prof. Zappert's case took place just at the time when the anterior part of the encephalon and the ophthalmic (optic) part are formed. Furthermore, experiments conducted by American workers have shown that certain chromatin bodies are especially liable to injury by X rays, such as the eyes and extremities. In the discussion following the demonstration it was agreed that at present the medical profession was not prepared to employ X rays on the ovary or uterus where pregnancy was assumed. Small myomata can be dealt with otherwise, and severe hæmorrhages can be controlled by irradiation of the liver, spleen, or hypophysis.

The Cause of Death in Injuries of the Skull.

Deductions from 69 fatal injuries to the head, investigated very thoroughly from the clinical and anatomical standpoint, were presented by Prof. Meixner to the Surgical Society of Vienna recently. He said that commotio cerebri played a very small part as the cause of death in these cases. In every case gross injuries of the brain substance or increased pressure by hæmorrhage was observed. In 12 per cent. of the cases only were contusions of the brain absent, but these contusions were not negligible conditions, as they were often ultimately responsible for the fatal issue. Even where death occurred within the first hour after injury commotio cerebri was not the real cause of death. Here the rapid loss of blood—sometimes the quantity was enormous—was chiefly responsible. Furthermore, in crushing injuries of the skull the destruction of the vital centres accounted for rapid death. But in over 50 per cent. of the fatal cases where death occurred more than an hour post trauma, and where a blunt instrument had inflicted the wound, the bruises to the cortex were the responsible factor. Protracted bleeding under the dura mater, in some instances also extending deeply into the brain substance, were the outcome of such injury, and in some cases inflammatory swelling of the brain followed. Hæmorrhage on the outside of the dura mater was much rarer and caused death more rapidly. The appearance of symptoms in hæmorrhage underneath the dura were very rapid, but death resulted much later. Changes and variations of symptoms were mostly due to multiple contusions. In a few cases only, where the decursus morbi was protracted, the immediate cause of death was not quite so clear; it seemed, he said, that here multiple changes were responsible. Serous meningitis, which was often suspected, had never been observed by Prof. Meixner in the post-mortem examination of such cases. He pointed out that contusion of the brain must not be confused with increased intracranial pressure. Contusion was an injury to the tissues, increased pressure a symptom, the contusion being the cause of the pressure. The expression "commotio" cerebri was generally used, whereas it should be "contusio" cerebri where protracted cranial conditions were meant. Fracture of the skull was generally accompanied by gross lesions, and the ultimate results in surviving cases should be regarded, he said, from the view not only of commotio but also of contusio cerebri.

The Biology of the Cancer Cell and Insulin.

Dr. Silberstein recently read a paper before the Gesellschaft der Aerzte, in which he discussed the problem of the biology of cancer. Warburg had already found, he stated, that cancer tissue produced 70–90 per cent. more lactic acid from dextrose than normal tissue. In collaboration with Dr. Revez and Dr. Freud the speaker had investigated the lactic-acid metabolism of cancerous animals. They did not find an increased output of lactic acid, perhaps because the excess was used up by the cells of the liver and by the muscles. (Prof. A. V. Hill's observations.) Animals in the pre-cancerous stage (subjected to painting with tar and injected with tumour tissue) had the same respiratory quotient as fasting animals. Feeding with carbohydrates did not affect this quotient in cancerous mice, but animals in the pre-cancerous stage were much more susceptible to insulin injections than healthy ones. Heated insulin was less active than in the cold state. After injection the pre-cancerous animals were hypersensitive to insulin for several days, whilst animals with fully-developed tumours could stand 30 to 50-fold normal doses of insulin, and the tumours exhibited a markedly slower rate of growth. The rate of growth increased when insulin was discontinued. If, soon after the injection of tumour masses, large doses of insulin were employed constantly, a large percentage of the animals remained free from cancer. Dr. Silberstein therefore urged clinicians to give insulin freely to the inoperable cancer cases, and to give a fair trial to this method, as the animal experiments gave such uniformly favourable results.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

The Dual Nature of Cardiac Automatism.

IN a thesis presented before the Academy of Medicine Dr. E. Donzelot criticised the conception of the single cardiac stimulus, transmitted from the auricles to the ventricles by conduction. This conception is based on two premises—first, the clinical evidence of a fixed relationship in the action of the auricles and the ventricles, and second, the experimental evidence which rests on the results of ligature, section, or compression of the auriculo-ventricular bundle, results which have further confirmed certain pathological observations. On the basis of several clinical observations, Dr. Donzelot holds that the cardiac cycle is governed by a double stimulus, auricular on the one hand and ventricular on the other. The auricular stimulus, which is apparently elaborated or centralised by the node of Keith and Flack, is of secondary importance only. The auricle is, effectually, only a blood reservoir whose periodic contractions are merely a security for the ventricle and not a necessity. The best proof of this lies in the finding that the function of the heart is adequate when the contraction of the auricles is absent or is seriously disturbed. The ventricular stimulus, elaborated or centralised by the node of Tawara, is, on the contrary, of prime importance. It is this stimulus which supplies, through the ventricular systole, the blood distribution throughout the body; any derangement of this stimulus is of importance and its absence is equivalent to a total cessation of the circulation. This view of a double cardiac stimulus modifies, by simplification, the general conception of arrythmias, and ought to open up a new line of research in ætiology and therapeusis of heart troubles.

Native Medical Service in French Colonial Africa.

French possessions in Africa cannot be made to yield of their best unless there is an adequate personnel to develop them. As far as medicine is concerned, the personnel is scanty and scattered, as was demonstrated to the Academy of Medicine recently by Prof. Emile Brumpt and Dr. Joyeux. The only method of improving the existing conditions, they held, was to develop the native medical service. Unfortunately, the number of doctors is negligible in comparison with the vast extent of French occidental and equatorial Africa. This number might be considerably augmented if the colony, in its own interests, were to offer to French doctors prospects in which adequate remuneration was made for a life work carried out far from la patrie, under difficult conditions. But it does not do so, for the French African colonies treat their doctors in very niggardly fashion, whereas neighbouring foreign colonies act much more generously towards their medical men. Young French doctors go willingly to Indo-China or to the Belgian Congo, but show little enthusiasm for occidental or equatorial Africa. The speakers said that more attention ought to be paid to this aspect of colonial development; the war and the present economic crisis had shown only too clearly the importance of medical service in the colonies.

How to Judge the Acoustics of a Hall.

At the Academy of Medicine Dr. Marage has been giving some practical advice on how to judge the acoustic properties of a hall, if these have not been explained beforehand to the singer or orator. The judgment is based on the following points: first in an empty hall, judged by the eye; a large hall, with a very high roof and side walls not furnished with boxes, and having somewhat concave background to the platform, is probably too resonant and will give echoes. A hall without galleries, with a low roof covered with a curtain, and in shape longer than it is broad, has probably very poor acoustic properties and the voice will carry badly. To judge by the ear:

A vowel sound is sustained in speaking or singing for about three seconds, and the performer can himself hear the resonance, if it lasts too long. When the hall is full of people, it must be remembered that the audience have a great absorptive power as regards sound, and resonance diminishes in proportion to the size of the audience. If, in speaking or singing, the performer can hear his own voice resonating slightly, then he may be assured that he is audible to all. If, in spite of efforts, no resonance is heard, then it is useless to force the voice, and the performer must address himself to the front rows of the auditorium. If one is aware of a strong resonance, the voice must be lowered to as deep a note as possible. If the attention of the audience flag—and the cause be not in the subject-matter of the performance—it must be remembered that the ear is more sensitive to high notes, and the performer should tune his voice to a higher pitch.

Public Health Services.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

THE following are some of the health statistics of a group of districts of varying local government status for 1924 :—

Name of district.	Mid-year population (R.-G.).	Birth-rate.	Death-rates per 1000 of the population.				Death-rates per 1000 births.		
			All causes.	Tuberculosis.	Cancer.	Resp. diseases with influenza.	Neonatal mortality.	Infant mortality.	Maternal mort. from childbirth.
Reading C.B. ..	93,680	17·1	10·7	1·03	1·4	1·9	26	54	3·1
Bootle C.B. ..	83,130	23·1	11·6	1·10	0·9	2·7	34	99	5·1
Holland C.C. (Lincolnshire)	87,100	20·7	11·7	0·98	1·7	1·8	—	65	2·7
Watford B. ..	48,628	17·7	9·8	0·82	1·3	1·9	30	55	5·9
Stafford B. ..	28,730	15·6	9·7	1·20	1·1	1·8	38	73	8·9
Runcorn R.D. ..	29,370	14·9	9·9	1·09	1·1	1·3	—	46	6·8
Chelmsford R.D.	25,710	17·8	11·7	0·80	1·3	1·9	—	50	2·2

C.B., County borough. C.C., County council. B., Borough. R.D., Rural district.

Reading.

Dr. H. J. Milligan reports that of the total number of persons who died nearly half had passed their sixty-fifth birthday. The rapid fall in tuberculosis mortality has not been maintained, and Dr. Milligan thinks post-war conditions, such as housing shortage, unemployment, and the general uncertainty and anxiety are responsible. The loan of shelters continues to be of great service. The Voluntary Care Association finds difficulty in securing employment for tuberculous persons; employers are prejudiced, and there is also the difficulty in fixing hours of work and adequate pay. The association found there was no opening for window-cleaning, brush-making, and chopping firewood, but a few patients were found satisfactory jobs as gardeners, motor drivers, delivering parcels, night-watching, and so on.

The Reading Medical Society is a limited company, conducted by the medical practitioners to meet the requirements of the dependants of insured persons by means of weekly subscriptions and caters for the medical requirements of 10,000 persons. The Reading Dental Society provides similarly for dental requirements. Dr. Milligan is convinced that the lessening number of new cases at the V.D. clinic represents a real diminution in the prevalence of venereal disease. The Dellwood Maternity Home admitted 239 patients. The accommodation has been found inadequate. A separate pavilion is to be provided for the nursing staff, and isolation wards for severe or septic cases. Owing to an outbreak of pemphigus neonatorum, the home had to be closed during January of the present year. The housing shortage makes this home a necessity. Thus of the 239 cases admitted, 62 came from a one-room and 93 from a two-room home. The husbands of 43 applicants were unemployed. The average fee paid was £1 9s. per week, and the fee was remitted in 21 cases. The antenatal clinic was attended by 266 new cases, and of these 208 were awaiting admission to Dellwood. Housing conditions remain very unsatisfactory. "There is much overcrowding, and dwellings in a ruinous condition have to remain in occupation for lack of alternative accommodation."

The school report shows that medical inspection has now reached a stable form and that the numbers inspected annually slightly exceed one-third of the average attendance. Although there is a gradual improvement year by year, certain defects, such as errors of vision and enlarged tonsils and adenoids, occur in much the same proportion as formerly. Ionisation of ear discharges continues to give good results, and there was no recurrence of discharge in cases treated in 1923. Parents are becoming more alive to the need for greater care of the teeth of their children, but it is noted that there is still a considerable prejudice against having teeth filled and also ignorance of the fact that the six-year old molars are permanent teeth. Over 20 per cent. of the children examined at the routine medical inspections were classed as "under-nourished," but the increased proportion is only apparent, being due to the adoption of a definite standard which gets rid of the personal predilection of the examiners. All children 7 per cent. or more under the average weight for their height are considered "under-nourished," and as time goes on this standard will provide a reliable basis for comparison. An examination of boys and girls of 12 years of age for enlarged thyroid was carried out during the year. Only those children whose thyroids could be noticed by inspection without measurement or palpation were counted. Nine out of 413 boys and 34 out of 551 girls had some enlargement. The majority of the cases seen were very slight. The school medical service of Reading is very well equipped for dealing with all kinds of special cases and exceptional children.

Bootle.

Dr. F. T. H. Wood says housing is still the most pressing need. The hoped-for completion of a large number of houses did not materialise, and the population increased by 1500. Only three houses, instead of 100, were completed. The council houses erected during the last five years numbered 26, 76, 200, 0, and 3 respectively. It is hoped to make better progress during 1925. Dr. Wood cites instances of urgent cases coming to the knowledge of his department. Attention has been given to the cleanliness of the milk, and the results of the examination of the local and imported milks are anything but satisfactory. In four cases "the milk can be considered to be grossly contaminated." Out of 22 samples examined for tubercle, four were found to be infected. The regulations for milk-shops are to be enforced more strictly, with a view to restricting the sale of milk to properly equipped dairies. Although 14 of the 118 samples of milk were reported by the public analyst to be adulterated, the average amount of fat in the 118 samples was 3·71 per cent., and of non-fatty solids 8·76 per cent., to be compared with the presumptive standard of 3 per cent. and 8·5 per cent. fixed for genuine milk.

A severe type of scarlet fever prevailed in Bootle during 1924 with a case-fatality of 2·2 per cent. The Schick test was used in the case of 158 scarlet fever admissions, and indicated the diminishing susceptibility at the later age-periods. Thus 26 out 53 gave positive results under 5 years of age, 23 out of 61 at the 5-10 age-period, 7 out of 35 at 10-15 years, none out of 6 at 15-20 years, and none out of 3 at ages over 20. New probationer nurses are tested after engagement. Since this practice was adopted, four out of 14 have given positive reactions and have been treated with toxin-antitoxin.

The maternity home has not been fully used, and the standard fee of 6 guineas for a fortnight's nursing and maintenance has been reduced to 4 guineas since March, 1925. During last year 114 cases were admitted, and it was estimated that 41 additional cases could have been accommodated at an added cost of £55 only, for food, laundry, &c. For the last financial year the gross cost was £1407, and the cost to the rates (after deducting patients' contributions, £165, and Exchequer grant) was £516. Dr. Wood draws attention to the high infant mortality from respiratory disease and the need for health visitors concentrating on clothing and ventilation advice. He stresses the need for an increase of staff. The Council in January, 1924, decided to appoint an additional health visitor, in accordance with the wish of the Ministry, but subsequently rescinded their decision. The present staff is unable to give adequate attention to the "toddlers." At the present time a weekly infant consultation is held at each of the three centres maintained by the Bootle Health Society. As the average attendances during the fourth quarter of 1924 were 115, 117, and 107 respectively, the need for an increase in the number of consultation days is obvious.

Lincolnshire: Holland.

Dr. H. C. Jennings reports that an arrangement came into operation in April, 1924, by which county patients may use the V.D. clinics at Peterborough and Lincoln, and that over £80 was spent in paying the railway fares of such patients. In November a tuberculosis dispensary was opened at Spalding and this will meet a long-felt want in the southern portion of the county. Hitherto the county council have established no maternity and child welfare centres, but arrangements have been made for opening a centre at Long Sutton and for utilising centres at Spalding and Boston. Dr. Jennings draws attention to the fact that the infant mortality is higher in the rural than in the urban districts, and attributes this to the rural mothers working on the land, and leaving their babies "in charge of some old woman, who is paid a small sum of money for her trouble." A table shows that cancer has always caused a higher death-rate in the low-lying parts of Lincolnshire than in other parts of England and Wales, and the report contains a suggested leaflet for issue to the public. There are now no "bona-fide" midwives practising in the county, the last having retired in 1921; but there are several women practising midwifery illegally and owing to the wording of the Act it has hitherto not been possible to stop them. The greater part of the county area is without a public water-supply, and dependent on rain-water tanks, shallow wells, or surface water from rivers. The whole question will be reviewed in the report for 1925.

Watford.

Dr. Wm. J. Cox refers to the shortage of working-class houses and the consequent overcrowding. The present scheme for 250 new houses will be a "great help," but 1000 houses are needed to meet present difficulties. Four cases of encephalitis lethargica were notified, two cases being in one family. There was one death. In answer to an inquiry from the Ministry, particulars as to scarlet fever since 1892 have been got out. Dr. Cox thinks hospital isolation has diminished the prevalence and may have helped to develop a milder strain of the disease. Among the school-children goitre was found to be negligible in prevalence among boys, but about 5 per cent. of the girls showed obvious signs. None of the cases was sufficiently marked to cause any anxiety.

Stafford.

Dr. J. T. MacNab hopes, that, now the private builder, encouraged by subsidies, is again coming forward, fresh efforts will be made to provide houses for the poorer workers. A second health visitor has been appointed and more commodious premises secured for the "centre."

The new sewage disposal works are about to be put in hand and will bring about a much-needed improvement. Thirteen cases of encephalitis lethargica were notified, with two deaths at ages 70 and 43. The first two cases occurred in March and the last in December. Only two or three of the surviving 11 are free from after-effects and in two at least there is mental impairment.

Runcorn Rural District.

Dr. J. S. Manson reports a great increase in house building, but he is doubtful as to whether the type being built will afford accommodation for the lower-paid wage-earner. A report on the prevalence of scarlet fever during the last 32 years has been made to the Ministry. The main conclusion was that the disease had become milder, but that there was very little diminution in its incidence. Four out of 34 samples of milk examined for tubercle were found to be infected. An effort is being made to interest the producers in the production of clean milk. Runcorn is within the Manchester regional town-planning area, and sent representatives to an area conference on smoke abatement. A committee has been set up to formulate practical suggestions for submission to another conference later on.

Chelmsford Rural District.

Dr. John F. Macdonald says the shortage of house accommodation is still acute throughout the district. During the year the rural council for the first time appointed a veterinary surgeon to carry out a systematic inspection of all the dairy herds in the district. The report of the veterinary surgeon, Mr. J. Bishop Young, is given in full. The cows inspected numbered 3939 in 160 herds, and Dr. Macdonald tells us that this single inspection resulted in the elimination of 33 dairy cows from the milking herds. Mr. Young's report contains much advice which should be valuable to the dairy-farmers of the district. For example, he emphasises the importance of milk-recording, and he cannot understand why, in the interests of clean milk production, manure is not removed at once instead of being piled close to the cowshed.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED MAY 9TH, 1925.

Notifications.—The following cases of infectious disease were notified during the week, namely:—Small-pox, 162; scarlet fever, 1691; diphtheria, 855; enteric fever, 60; pneumonia, 1027; puerperal fever, 47; cerebro-spinal fever, 13; acute poliomyelitis, 6; encephalitis lethargica, 80; dysentery, 4; ophthalmia neonatorum, 103. There were no cases of cholera, plague, or typhus fever notified during the week. The number of small-pox cases showed a decrease of 11 from the number for the preceding week. Five cases were notified from the County of London (Bethnal Green 4, Lambeth 1); 60 from Derbyshire (Derby C.B. 43, Alvaston and Boulton 1, Chesterfield 4, Clay Cross 2, Chesterfield R.D. 10); 11 from the county of Durham (Brandon and Byshottles 2, Hartlepool 1, Leadgate 2, Whickham 3, Chester-le-Street R.D. 1, Easington R.D. 1, Lanchester R.D. 1); 1 from Lancashire (Audenshaw); 2 from Leicestershire (Leicester C.B. 1, Hinckley R.D. 1); 1 from Lincolnshire, parts of Lindsey (Gainsborough); 8 from Northamptonshire (Kettering); 25 from Northumberland (Newcastle C.B. 3, Ashington 7, Bedlingstonshire 11, Newburn 1, Prudhoe 3); 13 from Notts (Nottingham C.B. 1, Hucknall 2, Kirkby-in-Ashfield 1, Mansfield 1, Mansfield Woodhouse 8); 6 from Warwickshire (Coventry C.B. 3, Nuneaton 3); 22 from Yorks, North Riding (Middlesbrough C.B.); and 8 from Yorks, West Riding (Rotherham C.B. 3, Adwick-le-Street 4, Maltby 1).

Deaths.—One death from small-pox belonging to Chesterfield was registered during the week. In the aggregate of great towns, including London, there were 2 deaths from enteric fever, 56 from measles, 11 from scarlet fever, 118 from whooping-cough, 31 from diphtheria, and 68 from influenza, as compared with 100, 139, 162, and 221 in the four preceding weeks. In London itself the deaths from influenza numbered 12, from whooping-cough 27, and from diphtheria 13.

THE DEATH REGISTERED AS FROM SMALL-POX AT CHESTERFIELD.

One death from small-pox belonging to Chesterfield was registered during the week ended May 9th. Dr. R. P. Garrow, medical officer of health for Chesterfield, informs us that the death so registered was that of a woman of 60 years in the last stages of chronic nephritis, with albuminuria, ascites, watery bronchial catarrh, and feeble action of the heart. He states that the attack of small-pox may or may not have accelerated her death. The attack was of the ordinary mild form prevalent in the district.

THE BATEMAN APPEAL.

As already explained in THE LANCET, it has been felt that material assistance ought to be offered to Dr. Bateman to meet the legal expenses of his recent successful appeal against conviction and to make good the deficiency in his professional income. Accordingly, the Bateman Fund has been opened and lists of contributions have appeared in recent issues. We have received additional contributions as follows:—

	£	s.	d.
Already received and acknowledged ..	416	18	6
Dr. J. Fawcett	2	2	0
Dr. F. Savery	2	0	0
"Anonymous"	2	0	0
Dr. J. B. Hurry	1	1	0
Dr. J. P. Westrup	0	10	6
"Abroad"	0	10	0
	455	2	0

Remittances should be forwarded to the Manager of THE LANCET, 423, Strand, W.C. 2, and made payable to the "Bateman Fund Account."

The Services.

ROYAL NAVAL VOLUNTEER RESERVE.

Surg. Cdr. H. L. Murray has been awarded the Royal Naval Volunteer Reserve Officers' Decoration.

ROYAL ARMY MEDICAL CORPS.

Maj.-Gen. W. H. S. Nickerson, late R.A.M.C., is appointed Hon. Surg. to the King, vice Maj.-Gen. T. W. Gibbard, late R.A.M.C. (ret.).

Capt. J. H. C. Walker is granted the temp. rank of Maj. whilst empld. as a Dep. Asst. Dir. of Pathology.

Capt. J. J. Molyneaux, half pay list, late R.A.M.C., retires on account of ill-health.

Lt. J. L. Howells relinquishes the rank of Lt. on enlistment into the Supplementary Res.

Lt. (on prob.) T. J. M. Dodd is secd. under the provisions of Art. 197, Royal Warrant for Pay and Promotion.

RESERVE OF OFFICERS.

Maj.-Gen. E. M. Pilcher, late R.A.M.C., having attained the age-limit of liability to recall, ceases to belong to the Res. of Off.

TERRITORIAL ARMY.

Maj. (Prov.) C. Douglas is confirmed in his rank.

Capt. W. S. Martin, R.A.M.C., to be Divisional Adjt. 47th (2nd Lond.) Div. and School of Instruction, vice Maj. W. P. Croker, R.A.M.C.

TERRITORIAL ARMY RESERVE OF OFFICERS.

Lt.-Col. D. G. Rice-Oxley, from Active List, to be Lt.-Col.

ROYAL AIR FORCE.

Flight Lt. (Hon. Squadron Leader) W. R. Kemp relinquishes his temporary commission on ceasing to be employed and is permitted to retain the rank of Flight Lt.

INDIAN MEDICAL SERVICE.

The King has approved the retirement of Lt.-Col. A. T. Gage.

Correspondence.

"Audi alteram partem."

THE BATEMAN APPEAL.

To the Editor of THE LANCET.

SIR,—Generous donors may send larger sums. If, however, the majority of registered medical men each sent a small sum (such as the P.O. for 10*s.* which I now enclose) it would assure Dr. Bateman of our widespread sympathy, and result in a sufficiency to meet the needs.

I am, Sir, yours faithfully,

Mussoorie, April 29th, 1925. ABROAD.

POST-GRADUATE TEACHING IN MIDWIFERY.

To the Editor of THE LANCET.

SIR,—As obstetrics and post-graduate work are both under discussion at present, it appears to me that the experiences of a post-graduate may be of service to those responsible for the organisation of such work. After having practised for a number of years in India I recently returned to this country with the object of taking up research work in connexion with maternal morbidity in India, and with this end in view I was anxious to obtain the best post-graduate course in obstetrics available.

I went first to the headquarters of a post-graduate association in London, and when I had explained what I wanted the clerk said: "If it is obstetrics you wish, I am sorry we can do nothing for you. It would not be worth your while to pay a fee." I then looked round the London hospitals. Some of the obstetricians connected with them were extremely kind and invited me to attend their clinics, which I did, but it was on the understanding, of course, that the students had the first right to the clinical material, and a casual visitor felt a delicacy about drawing the attention of the staff to subjects of interest which would be of little importance to students preparing for examination.

I then looked beyond London and heard of a post-graduate course in obstetrics in Edinburgh, but this only took place during the summer vacation, a time not suitable for me. I knew that post-graduates were catered for in Dublin, and therefore I entered as a post-graduate at the Rotunda Hospital for a month.

The Rotunda Hospital has a great deal to fit it for a first-class post-graduate school. It attends, in its extern and intern departments, over 4000 labour cases annually. It has ample accommodation for students and an establishment which enables them to board at reasonable rates with a fair degree of comfort. As regards obstetrics, it has deservedly a world-wide reputation. The applications from students and post-graduates are very numerous. It was, therefore, disappointing to find that more attention was not given to teaching. Let me briefly describe the opportunities offered. Students and post-graduates, 40 to 50 in number, were grouped together, and there were in addition 20 to 30 probationer nurses attending lectures and deliveries. Three times a week at 10 A.M. the Master visited the cases in the waiting ward and then delivered a lecture on midwifery. These lectures were most interesting, but no effort was made to make them useful to post-graduates. The whole subject of obstetrics was gone through in rotation, and although the matter was, of course, entirely up-to-date, it might quite happen that the post-graduate did not, during a month, hear anything he had not known five or ten years before; that is to say, none of the subjects on which recent work has been done might happen to have their turn. A short clinic on gynæcological out-patients followed, more useful to the student than to the post-graduate, and the work finished at 12 or shortly after. On two days a week operations might be attended at 10 A.M. On these days the post-graduate might, if he liked, attend a half-hour lecture on elementary midwifery given by one of the assistant masters. This finished the work. There were no visits to the wards (other than the waiting room), and no opportunity to follow up the cases seen in the labour room and theatre. True, it was stated in the rules that the students might visit the wards, but those who did so frequently found they could not be admitted owing to the nurses' work or other matters. A few enthusiastic spirits visited the waiting ward each evening to see the new cases. There were eight beds in the ward, seldom all occupied, and it was fortunate for the patients that the bulk of the students did not attend. Little antenatal work appeared to be done, and that the students could not attend as it was carried on at the same hour as the Master's lecture.

There was no library other than half-a-dozen antiquated volumes, no periodicals available, no reading room where silence was observed, no notices of clinics or lectures elsewhere which the post-graduates might attend. The medical students were kept fairly busy attending and visiting cases in the district, and as a rule only remained two or three weeks, but the post-graduates (who took no normal cases) often remained as long as six months, which period was required for admission to the L.M. examination. It seemed to be the common opinion that one month's careful reading of the Master's book was sufficient preparation for this examination, which was purely oral, and that the remaining five months could be spent in amusement. The atmosphere of the common mess-room was not conducive to study.

Deliveries, of course, took place at any time. But owing to the large numbers of students, only a few could really see what was being done. All except the most important obstetric operations were done by one of the assistant masters. Most of the post-graduates were profoundly disappointed at not getting any operative experience even after months of residence. There were two types of post-graduates, the first, and by far the larger, being newly qualified practitioners especially anxious to gain practical knowledge, the second being older practitioners, frequently from abroad, who wished to learn the latest obstetric methods. The attitude of the hospital authorities seemed to be that post-graduates were tolerated and were left to pick up what information they could.

I feel I owe an apology to that distinguished institution, whose work I respect and admire, for these criticisms, but it appears to me that they illustrate the principle that post-graduates cannot be taught with students, and that a different organisation altogether is required, at least for those older practitioners who do not need experience but who wish to learn the latest methods in the shortest possible time and are willing to pay to do so. If such a course could be arranged with the coöperation of several of the lying-in hospitals in London, it need interfere little with the teaching of students. It would be necessary to arrange for lectures, visits to lying-in wards (which should include not only clinical instruction, but instruction in nursing organisation and newer hospital construction), attendances at antenatal clinics, demonstrations on newer methods of examination (including bacteriological, X rays, &c.), visits to special institutions in connexion with infant welfare, venereal disease, &c., and attendance at selected operations. It would be essential that the teachers should all be experts in their own subjects.

I am, Sir, yours faithfully,

May 8th, 1925. MARGARET I. BALFOUR.

THE ALLEVIATION OF CHRONIC PROGRESSIVE DEAFNESS.

To the Editor of THE LANCET.

SIR,—We have read with interest and pleasure Mr. G. C. Cathcart's paper on the use of the Zund-Burguet electrophonoide in chronic progressive deafness. Indeed, the pleasure is enhanced by the fact that, in spite of the discouraging reports of other otologists, we had determined to investigate the value of the Zund-Burguet apparatus for ourselves. Our results have so far justified us, and they appear to be quite equal to those of Mr. Cathcart, although we have not yet used the machine sufficiently long to enable us to speak decidedly as to permanence or otherwise of the improvement effected. We agree with Mr. Cathcart that tinnitus is the first symptom to yield to the method, improvement of hearing occurring later. In one case of "hysterical" deafness the hearing became worse; this appears to us to be strong evidence against any suggestion that the treatment acts by any "psychic effect." We attach great importance to the concurrent use of a vibrator, to which we are inclined to attribute the improvement in general health which we have, in common with Mr. Cathcart, noted in nearly every case.

We are, Sir, yours faithfully,
MACLEOD YEARSLEY, F.R.C.S.
CHARLES BENEY, M.B. Camb., M.R.C.S.

Wimpole-street, W., May 12th, 1925.

SECONDARY SARCOMA OF THE PANCREAS.

To the Editor of THE LANCET.

SIR,—In your issue of May 9th Dr. James Crooks records a case with the above description. There are many other such cases scattered in the columns of medical journals and Proceedings of societies. Some of these, perhaps half the total number, are described as sarcomas; the other half are to be found under such titles as chloroma or leukæmia. Where the former title is used, the original site of the sarcoma seems to be arrived at by a process closely analogous to guess-work, and in the case which you now record there is, alas, more than a little evidence of this same process.

Why should the ovaries be picked upon as the primary site of the disease? The disposition of the secondary growths, so-called, in such regions as the orbits hardly suggests origin in the ovary any more strongly than origin in the pancreas or thymus. If it be held that the secondary growths were disseminated by the blood-stream, we have still no particular reason to suspect the ovaries. Perhaps we may be told what clinical, anatomical, or pathological feature of this case justified the conclusion that the primary growth was in the ovaries.

Putting aside for the moment the question of sarcoma, one cannot help noting that there are many features in this case which suggest leukæmia as a more likely diagnosis. The blood condition is not typical of what the text-books used to denominate leukæmia, but it is much less typical of anything like sarcoma, and can be many times paralleled from the records of cases in which the blood was at some other stage frankly leukæmic.

There is another feature which might have aroused attention, and this is recorded in the following form, "Pressure over the shafts of the femora caused pain." One assumes that this feature was rather striking, or it would not have earned mention. What was it due to? One is accustomed to find it recorded in cases of leukæmia and supposes (rather vaguely) that hyperactivity of the bone-marrow and absorption of bone are to blame. But one may doubt if bilateral tenderness has ever before been recorded in a case of primary sarcoma of the ovaries. Another bilateral feature is afforded by the growths in the orbits. There is no evidence to tell us whether these originated in the periosteum or, as is more likely perhaps, in the connective tissues of the lacrymal glands, but a reference to the literature of Mickulicz's disease would doubtless show that this feature was more frequent in leukæmia than in sarcoma of the ovaries.

I admit that the report on the microscopy of the liver troubles me. There is so usually "round-celled infiltration" in leukæmia that its absence is curious. Perhaps a further search of the sections might reveal this, or perhaps the only section taken happened to be in a spot free from such change. However that may be, one may perhaps plead with authors who

Monro, Royal Free; W. J. Moody, London; G. C. Morris, St. Mary's; W. B. Norcott, Guy's; Jessie G. A. Norman, Charing Cross; J. E. J. Palser, London; C. F. Parry, Guy's; W. E. C. Parry, Univ. Coll.; G. Paterson, St. Thomas's; H. L. Peake, Guy's; L. V. Pearson, St. Bart.'s; H. Peaston, Liverpool; B. Perchman, Charing Cross; T. J. Pittard, St. Bart.'s; W. G. Platt, Leeds; C. G. E. Plumstead, St. George's; F. H. Pratt, Guy's; F. E. Roberts, Birmingham; Victoria A. Roberts, Royal Free; K. E. R. Robertson, St. Mary's; K. G. Salmon, St. Bart.'s; H. Scudamore, London; F. L. G. Selby, St. Mary's; F. G. A. Shaheed, Westminster; Sara C. A. Sharpe, St. Mary's; T. St. J. H. Silvester, J. A. Simons, and E. G. Smallbone, Guy's; R. H. Smith, Manchester; M. Sourasky, Leeds; S. Speck, Middlesex; B. L. Steele, Univ. Coll.; Gertrude H. C. Stinson, Royal Free; F. W. Ta'Bois, London; C. C. Taffs, St. Thomas's; D. E. Thomas, St. Bart.'s; D. W. R. Thomas, Middlesex; J. E. Thomas, Cardiff; Dorothy I. Valentine, Liverpool; D. C. Virmani, Charing Cross; P. R. Viviers and W. F. Waudby-Smith, St. Bart.'s; Elizabeth M. Whishaw, St. Mary's; E. A. White and J. S. Whitton, St. Bart.'s; G. O. Williams, Liverpool; T. I. Williams, Guy's; J. H. Willis, London; D. B. Wilson, Birmingham; H. F. Wilson, London; and H. Yousri, Birmingham.

Midwifery.—J. H. Anderson, Guy's; D. G. Balakirsky, Middlesex; C. V. N. Baldry, Sydney; H. I. C. Balfour, St. Bart.'s; W. A. Ball, King's Coll.; J. M. Bassett, Edinburgh; J. R. Beal, Manchester; C. E. Beare and M. Behr, Middlesex; A. D. Belilios, St. Thomas's; J. G. Y. Bell, King's Coll.; W. F. D. Benton, St. Bart.'s; S. N. Bhansali, Rotunda; S. S. Bhatnagar, Middlesex; G. H. Bickmore, Charing Cross; C. A. Birch, Liverpool; Mabel C. Booysen, Charing Cross; H. C. Boyde, St. Bart.'s; G. J. O. Bridgeman, Cambridge and St. George's; Theodora Brookes, Royal Free; A. S. S. Brown, Liverpool; J. A. S. Brown, London; T. E. Brown, St. Thomas's; W. Buckley, London; H. A. Bulman, Middlesex; R. C. L'E. Burges, Birmingham; T. J. Burke, Cardiff and Charing Cross; J. W. D. Buttery, St. Bart.'s; H. A. Byworth, St. George's; Irene F. Callender, St. Mary's; J. P. Carpenter, Birmingham; A. G. Chamberlain, St. Bart.'s; R. Childs, St. Thomas's; Dorothy A. Chown and Alison M. Clark, St. Mary's; J. G. Cox, St. Bart.'s; E. A. Darukhanawalla, Middlesex; A. E. de Fonseka, King's Coll.; W. H. Dowell, Guy's; Muriel E. Drew, Bristol; F. W. Dunn, Charing Cross; J. Dywien, Guy's; R. W. B. Ellis and A. K. H. El Shurbagi, St. Thomas's; H. Evans, London; T. F. Everett, Middlesex; J. A. Eyres, King's Coll.; O. F. Farndon and R. R. Fells, St. Bart.'s; M. Fine, London; M. Fishman, St. Bart.'s; W. S. Flowers, Leeds; E. A. Freeman and W. F. Gaisford, St. Bart.'s; Margaret E. J. Gashion and Edith Giles, Charing Cross; B. M. C. Gilsenan, St. Bart.'s; A. Glatt, Liverpool; Dorothy Godden, Royal Free and St. Mary's; Myrtle S. Goldrich, Charing Cross; Edith L. Gould, Royal Free; Phyllis M. Grainger, Birmingham; S. J. P. Gray, St. Bart.'s; W. H. Green, Middlesex; C. R. M. Greenfield, St. Bart.'s; L. A. N. Greenaway, King's Coll.; Margaret H. Greg, Manchester; O. J. Gregerson, Adelaide and London; J. C. P. Grey, St. Thomas's; G. J. Gross, King's Coll.; W. V. Harke, St. Thomas's; Helen M. Harris, Royal Free; L. J. Haydon, St. George's; Dorothy G. Hervey, Birmingham; J. D. Hindley-Smith, St. George's; W. S. Hinton, B. L. Hodge, J. C. Hogg, and L. Holmes, St. Bart.'s; R. St. J. Honner, Sydney and London; Kathleen M. Horton, London; E. Hughes, Liverpool; C. L. Hunt, St. Bart.'s; D. S. Jackson, St. Mary's; P. B. Jackson, Middlesex; W. T. Jones, Cardiff; A. K. A. Khalik, Cairo; I. Landon, St. Bart.'s; F. J. L. Lang, St. Mary's; R. L. J. Le Clezio, St. Thomas's; D. W. E. Lloyd, Guy's; Janet Lochore, Westminster and Royal Free; Joan L. Lush, Univ. Coll.; Elsie Lyon and Margaret B. MacDonald, Charing Cross; J. R. Macdougall, St. Bart.'s; Alice M. C. Macpherson, Royal Free; I. McPherson, Middlesex; M. L. Maley, St. Bart.'s; R. Marnham, St. George's; Mary A. Marshall, St. Mary's; S. R. Matthews, Middlesex; K. N. Mawson, Liverpool; C. A. L. Meredith, Middlesex; T. C. Mort, Cardiff; A. H. Musgrove and D. A. Newbery, Guy's; E. J. Newman, London; Norah M. A. Niall, Charing Cross; H. A. Nicholls, St. Bart.'s; M. G. Nimatallah, Guy's; M. Odess, St. Mary's; C. E. Ogden, St. Bart.'s; E. J. O'Keeffe, London; Gwynedd M. E. Olive, Royal Free; A. Orlinsky, Middlesex; Catherine E. Orr-Ewing, Royal Free; M. N. Oster, Westminster; M. E. J. Packer, Bristol; J. G. Paley, St. Bart.'s; Florence M. Parsons, Charing Cross; L. V. Pearson, St. Bart.'s; G. E. G. Peirce, St. Mary's; K. R. T. Peiris, King's Coll.; L. C. Peringuey, Manchester; G. L. S. Plumbly, Univ. Coll.; N. R. Pooler, St. Mary's; F. H. Pratt, Guy's; D. C. Price, St. Bart.'s; Agnes M. Ramsbotham, Royal Free; Margaret G. P. Reed, King's Coll.; R. I. Richards, St. George's; Margaret A. Ritchie, Charing Cross; Janet M. Robertson, St. Mary's; Alice L. Robson, Royal Free; G. E. Rowan, St. Thomas's; I. Sacks, Middlesex; H. Scudamore, London; S. T. Seccombe, St. Thomas's; H. N. Seymour-Isaacs, St. Bart.'s; H. Shenouda, Cardiff; H. J. A. Simmons, Middlesex; Nancie A. Simmons, Charing Cross; J. A. Simons, Guy's; R. K. Smith, St. Bart.'s; S. Speck, Middlesex; J. Spencer, St. Bart.'s; C. A. Stanley, St. Thomas's; Nettie H. Stein, St. Mary's; T. W. Stephens, St. Thomas's; A. F. H. Stewart, Guy's; R. G. Strouts, London; H. Syed, King's Coll.; F. W. Ta'Bois, London; I. D. J. [illegible], Univ. Coll.; G. P. Thorold, St. Thomas's; F. F. Thorne, Birmingham; O. R. Tisdall, St. Bart.'s; Mary M. Tulloch, Charing Cross; Beatrice E. Turner, Royal Free; I. Vinson, London; P. R. Viviers, St. Bart.'s; E. Walsh, Manchester; L. H. F. Walton, St. Thomas's; Elizabeth M. Whishaw, St. Mary's; C. H. C. White, Guy's; E. A. White and J. S. Whitton, St. Bart.'s; Addie Wilkes, Charing Cross; E. G. Williams, Leeds; Jane C. Williams, St. Mary's; J. I. Williams, Middlesex; A. G. Wilson, St. Thomas's; H. F. Wilson, London; Eileen C. Wise, King's Coll.; H. P. Yew, Guy's; H. Yousri, Birmingham; and A. M. M. Zeiwer, St. George's.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.—An extraordinary Comitia of the College was held on May 11th, Sir Humphry Rolleston, the President, occupying the chair. It was announced that Dr. Bernard Hart would deliver the Goulstónian lectures, Dr. A. Shadwell the FitzPatrick lectures, and Sir Thomas Horder the Lumleian lectures for 1926.—Those gentlemen who were elected to the Fellowship on April 30th were admitted as Fellows.—A supplementary list of 96 candidates to whom licences to practise physic had been granted was submitted as follows. (The medical schools at which the candidates studied will be found in the list of the Royal College of Surgeons.)

*Agnes L. Adam, David Aserman, Edmund L. Auguste, Charles W. Bamford, Philip S. Bell, Riad H. Bestawros, Arthur T. Bettinson, *Margaret Bowstead, Paul D. Braddon, *Gwenddolen J. Brooke, *Stella M. Brown, *Dora M. Cadman, *Mary E. Campbell, Walter E. Chiesman, *Eileen M. Clarke, *Gladys M. Clarke, *Winifred M. Clement, Douglas R. T. Clendon, Isaac Cohen, Ronald W. Cuningham, Stefanus H. Daneel, Gwylon Davies, Howell J. Davies, Douglas S. Dixon, John V. Dockray, Dennis C. Drake, William Egan, Valentine H. Ellis, Anthony J. K. Finch, *Barbara Finch, *Winifrede M. Fish, Victor L. Fisher, Mark Footerman, Ganesh V. Gollerkeri, Arkyl S. Gough, Ralph Green, Charles J. Grosch, Ronald F. Guymer, Leslie B. Haye, John B. Hayes, *Barbara J. Hick, *Nancy M. Hield, Alfred R. Hill, Alan T. Howell, John U. Human, *Dorothea A. C. Hunt, Jack N. Jacobson, Herman Kessel, Arthur M. Lazarus, Samuel Lerner, Solomon Levy, Cyril J. Lovering, Derek A. Lubbock, James W. McGuire, Alexander C. MacLeod, Douglas H. MacLeod, Duncan R. Martin, Alistair Mead, George C. Michael, *Ruth L. Milne, Edward F. Molony, John P. Monkhouse, Herbert Moore, Arthur H. Morley, Victor M. Morris, Isaac S. Moscow, Gardner W. Murray, George H. Pringle, Philip E. Pym, *Fanny Rabinowitz, David I. Rees, Thomas Rees, *Nellie H. Reynolds, Alec W. Riddolls, Clifford E. Roberts, Alexander E. Ross, *Edith M. Ross-Johnson, Thomas W. E. Royden, *Martha N. Russell, Hellmuth H. E. Schulz, Harold J. Selby, Charles F. J. Smith, *Beatrice M. Smithies, Kenneth A. Soutar, John M. Stirling, Stephen V. Strong, *Sylvia Sworn, James E. Swyer, Kim H. Tan, John G. S. Thomas, Philip G. Trafford, Neville A. A. van Buuren, Theodore E. Walsh, *Helen D. Watson, Rudolph A. K. Wiener, and Hector G. Wimbush.

* Under the Medical Act, 1876.

The application of Dr. Hugh Roger Smith for restoration of the Membership, relinquished in 1919, was granted.—Dr. Raymond Crawfurd was appointed a member of the Committee of Management to fill the vacancy caused by the death of Dr. J. A. Ormerod.—The President announced that he had nominated Sir P. Horton-Smith Hartley as representative of the College at the Conference of the National Association for Prevention of Tuberculosis.—It was decided to appoint a subcommittee to consider and codify the by-laws in view of recent alterations in them.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—At an ordinary meeting of the Council of the College on May 14th, Sir John Bland-Sutton, President, in the chair, the Secretary reported the death of Sir Rickman Godlee, Bart., K.C.V.O., past President and past member of the Council and of the Court of Examiners, whereupon the following vote of condolence was unanimously passed:—

> That the Council hereby express their deep regret at the death of Sir Rickman Godlee and their very sincere sympathy with Lady Godlee in the great loss which she has sustained. The Council also desire to express their grateful sense of the many services rendered to the College by Sir Rickman Godlee as an examiner and member of the Council, and especially to record their appreciative recognition of the distinction and ability with which he fulfilled the duties of President during his three years of office. The Council feel that the surgical profession has lost one of its ablest leaders whose skill in practice and many accomplishments will cause his name always to be held in honoured remembrance.

A letter was read from Mr. G. Percy Dodds-Parker resigning his appointment as a member of the Court of Examiners in Surgery. The resignation was accepted and the vacancy will be filled at the Quarterly Council in June.—Prof. Antonin Gosset, of Paris, was introduced, and having signed the roll of Honorary Fellows was presented with the Diploma of Honorary Fellowship.

Diplomas of Member were conferred upon 231 candidates (including 12 women) who have passed the requisite examinations and have complied with the by-laws. The following are the names and medical schools of the successful candidates:—

Agnes L. Adam, Royal Free; C. S. Anderson, St. Mary's; D. Aserman, Cambridge and St. Thomas's; E. L. Auguste, Middlesex; C. W. Bamford, Calcutta and London; W. A. Barnes, Cambridge and St. Bart.'s; St. C. E. J. Barrett, Belfast and Middlesex; J. R. Beagley, St. Bart.'s; I. C. P. Beauchamp, Cambridge and Guy's; Diana J. K. Beck.

Royal Free; P. R. T. Becker, Cape and Guy's; P. S. Bell, Westminster; Elizabeth E. Benson, Bristol; R. H. Bestawros, Cairo and London; A. T. Bettinson, St. Bart.'s; C. P. Blacker, Guy's; W. R. W. Bonner-Morgan, Cardiff and St. Bart.'s; E. H. Boodrie, Calcutta and St. Mary's; Margaret Bowstead, Royal Free; D. de C. Boxill, Long Island and St. Mary's; P. D. Braddon, Sydney; P. G. Brain, London; M. K. Braybrooke, St. George's; R. B. Brow, Univ. Coll.; C. W. Brook, Cambridge and St. Bart.'s; Gwendolen J. Brooke, Univ. Coll.; G. M. Brooks, Birmingham; Stella M. Brown, King's Coll.; M. F. Butler, Guy's; Dora M. Calman, Royal Free; Mary E. Campbell, Charing Cross; L. I. M. Castleden, St. Bart.'s; Enid A. Ceiriog-Cadle, Royal Free; M. Chandra, Punjab and St. George's; R. J. K. Chattey, Middlesex; W. E. Chiesman, Cambridge and St. Thomas's; J. E. Church, Cambridge and St. Bart.'s; Eileen M. Clarke, Royal Free; Gladys M. Clarke, Royal Free and St. Mary's; Winifred M. Clement, Royal Free and Charing Cross; D. R. T. Clendon, Univ. Coll.; Hilda A. Cohen, Cardiff; I. Cohen, Middlesex; Jean Cooper, Punjab and Royal Free; Catherine A. Cowan, Royal Free; P. V. Cranmer, Univ. Coll.; D. P. Crawford, St. Thomas's; D. A. L. Crawshaw, Guy's; Victoria M. Crosse, Royal Free; G. P. Crowden, Univ. Coll.; J. Crowther and J. Cumming, Manchester; R. W. Cuningham, Guy's; R. N. Curnow, St. Bart.'s; R. R. Dalling, Liverpool; S. H. Daneel, Cape and Guy's; H. E. Daniel, Cardiff and St. Bart.'s; G. Davies, Guy's; H. J. Davies, St. Mary's; R. K. Debenham, Cambridge and London; A. E. du Chazal, Univ. Coll.; J. D. Dillon, Liverpool and St. Bart.'s; D. S. Dixon, Middlesex; J. V. Dockray, Cambridge and Middlesex; W. H. A. Dodd, Liverpool; A. S. M. Douglas, Guy's and St. George's; J. L. C. Doyle, St. Bart.'s; D. C. Drake, Guy's; W. Egan, Charing Cross; V. H. Ellis, Cambridge and St. George's; G. I. Evans, Manchester; P. F. Evans, London; Christabel S. Eyre, Charing Cross; C. R. Fielding, Manchester; A. J. K. Finch, St. Mary's; Barbara Finch, Royal Free; Winifrede M. Fish, King's Coll.; V. L. Fisher, Guy's; F. J. T. Foenander, Middlesex; M. Footerman, Univ. Coll.; C. A. Francis, Cambridge and St. Bart.'s; D. B. Fraser, St. Bart.'s; H. E. Gamlen, St. Thomas's and Durham; A. W. Gardner, St. Bart.'s; J. H. Gibbens, Cambridge and St. Thomas's; G. D. Gillbard, Middlesex; A. Gompertz, Durham; R. T. Goodyear, Cambridge and Liverpool; G. V. Gollerkeri, Bombay and Middlesex; A. S. Gough, Guy's; D. R. Grant, Alberta and Guy's; R. Green, St. Bart.'s; C. J. Grosch, Cambridge and Middlesex; R. F. Guymer, Cambridge and St. Thomas's; G. S. Hale, St. Bart.'s; S. Harris, Oxford and St. Thomas's; J. H. Hartland, Birmingham; F. C. Haward, St. Thomas's; L. B. Haye, Univ. Coll.; J. B. Hayes, Charing Cross; Marjorie F. M. Hayward, London; H. L. Heath, Birmingham; Catherine M. Hext, London; Barbara J. Hick, Royal Free and St. Mary's; Nancy M. Hield, Royal Free; A. R. Hill and H. F. Hiscocks, St. Bart.'s; F. D. M. Hocking, Middlesex; R. G. Hodder, St. Thomas's; A. T. Howell, Cambridge and St. Thomas's; H. B. Howell, St. Bart.'s; J. E. Howie, Liverpool; W. Hughes, Middlesex; J. U. Human, Guy's; Dorothea A. C. Hunt, Royal Free; J. T. Hunter, St. Bart.'s; J. N. Jacobson, Cape and St. Thomas's; I. S. Jacobsz, Cape and Guy's; M. E. M. Jago, Guy's; L. E. Jones, Cardiff and St. Thomas's; L. H. Jones, Guy's; W. H. M. Jones, Cardiff; B. Kaplansky, Cape and London; P. N. Kapur, Lahore and London; R. St. J. Kemm, Bristol; H. Kessel, Guy's; G. M. King, Cardiff and King's Coll.; J. G. Kingsbury, Guy's; O. K. Lakshmanan, Madras and St. Bart.'s; J. O. C. Langford, St. Bart.'s; Kathleen M. Lankester, Royal Free; A. M. Lazarus, Melbourne; G. A. Q. Lennane, Cambridge and St. Thomas's; S. Lerner, Univ. Coll.; H. M. O. Lester, St. Thomas's; Muriel A. Lester, Royal Free; S. Levy, Middlesex; T. J. Lloyd, Cardiff; C. J. Lovering, Cardiff and Middlesex; D. A. Lubbock, Univ. Coll.; J. W. McGuire, Calcutta and St. Mary's; A. C. MacLeod and D. H. MacLeod, Middlesex; A. McMillan, Birmingham; D. R. Martin, Guy's; S. P. Meacock, Cardiff and Guy's; A. Mead, St. Thomas's; G. C. Michael, London; Ruth L. Milne, Royal Free; J. G. Milner, Cambridge and St. Bart.'s; V. S. Mitcheson, Cambridge and Birmingham; E. F. Molony, Cambridge and St. Bart.'s; J. P. Monkhouse, St. Mary's; S. K. Montgomery, Univ. Coll.; A. J. Moody and C. A. Moody, St. Bart.'s; Florence I. R. Moore, Royal Free; H. Moore, Belfast and Guy's; A. H. Morley, Leeds; V. M. Morris, Middlesex; W. G. R. Morris, Bristol; I. S. Moscow, St. Bart.'s; C. A. Mulligan, Manchester; G. W. Murray, Guy's; Marjorie Murrell, Royal Free; W. Ogden, St. Bart.'s; J. B. Oldham, Liverpool; Dorothy M. Payton, Birmingham; A. P. Pearce, Leeds and London; C. O. Perera, Ceylon; A. Pierce, Birmingham; E. P. Pratt, Durham and St. George's; B. Press, St. Bart.'s; G. H. Pringle, Univ. Coll.; P. E. Pym, Cambridge and St. Bart.'s; Fanny Rabinowitz, Charing Cross; J. Rafalowsky, Zurich and Univ. Coll.; S. Randall, London; D. I. Rees, St. Thomas's; T. Rees, Manchester and St. Bart.'s; Nellie H. Reynolds, King's Coll.; Grace D. Rice, St. Mary's; H. S. Rich, Sydney and Middlesex; A. W. Riddolls, Guy's; G. D. Robb, Otago and Middlesex; C. E. Roberts, Oxford and London; A. E. Ross, St. Bart.'s; Edith M. Ross-Johnson, Univ. Coll.; J. E. C. Rouse, St. George's; A. T. F. Rowley, Bristol; T. W. E. Royden, Cambridge and St. Bart.'s; Martha N. Russell, Cape and Royal Free; H. H. E. Schulz, Cape and St. Thomas's; T. A. Seekings, Univ. Coll.; H. J. Selby, Guy's; R. Sellick, St. Thomas's; D. G. Shields, Cambridge and St. Bart.'s; C. F. J. Smith, St. Mary's; J. R. Smith, Cambridge and St. Bart.'s; Beatrice M. Smithies, Charing Cross; K. A. Soutar, St. Thomas's; J. S. Spickett, Cardiff and St. Bart.'s; A. A. Spiro, Manchester; E. F. Stead, London; G. H. Steele, Univ. Coll.; J. M. Stirling, Madras and Charing Cross; S. V. Strong, Guy's; Sylvia Sworn, Univ. Coll.; J. E. Swyer, London; J. S. Symons, London; H. K. Tan, Hong-Kong and Middlesex; Catharine F. Taylor, Royal Free; G. Taylor, St. Mary's; J. G. S. Thomas, Oxford and Guy's; P. G. Trafford, Guy's; Henrietta Trend, Royal Free; Joan W. Urwick, Charing Cross; K. H. Uttley, Cambridge and Univ. Coll.; N. A. A. van Buuren, Cape and Univ. Coll.; J. M. van Schalkwyk, Cape and Guy's; T. E. Walsh, Cambridge and St. Thomas's; Y. S. Wan, Cambridge and St. Bart.'s; E. C. Warner and R. L. Waterfield, Guy's; Helen D. Watson, Royal Free; M. Weisman, Paris and Manchester; W. S. Whimster, Guy's; R. A. K. Wiener, Cape and St. Thomas's; R. M. Windeyer, Cambridge and St. Bart.'s; H. G. Wimbush, Cambridge and Guy's; K. K. Wood, Manchester; J. Wood, King's Coll.; H. M. Woodman, Cambridge and King's Coll.; and H. C. Wykerd, Cape and London.

UNIVERSITY OF LONDON: REPORT OF THE PRINCIPAL OFFICER.—Sir Cooper Perry, in his report on the work of the University during the year 1924-25, records a slight decrease in the total number of admissions and of matriculations compared with the previous year. The chief item of medical interest during the year was the granting of a Charter to the London School of Hygiene and Tropical Medicine in consequence of which the Department of Bacteriology and Public Health of King's College will be closed at the end of the present session. Prof. H. R. Kenwood having resigned the Chadwick Chair of Hygiene at University College, no steps are being taken at present to fill that chair. The Principal Officer adverted to the foundation of new chairs in the hospital medical schools announced during the year: a Chair of Physics at St. Bartholomew's Hospital Medical College to which Dr. F. L. Hopwood has been appointed; a Chair of Medicine at the London Hospital Medical College, Dr. A. W. M. Ellis occupying it; the S. A. Courtauld Chair of Anatomy at the Middlesex Hospital Medical School with Dr. T. Yeates as the first holder; the Chair of Biochemistry at the same school; a new Chair of Pathology at the London School of Medicine for Women with Dr. J. H. Dible as the first holder; the granting of the title of Professor of Anatomy to Mrs. M. F. Lucas Keene at the same school, and the title of Professor of Surgery to Mr. C. C. Choyce at University College Hospital Medical School. During the year progress has been made in the visitatorial inspection of the various schools of the University. The Principal Officer notes that correspondence has passed during the year between the University and the Treasury upon the subject of the Bloomsbury site, decision on which is still deferred. Whatever may be the result of the deliberations of the departmental committee, Sir Cooper Perry writes: "We may await with confidence its findings, not unmindful that in whatever form the body of our constitution be moulded, the spirit which gives life and growth remains always within ourselves alone."

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—Beginning on June 2nd, a four weeks' course in the study of Venereal Disease will be held at the London Lock Hospital (Dean-street). The out-patient departments will be open to post-graduates enrolling for the course and in the afternoons will be given a lecture by one of the members of the staff dealing with the diagnosis and methods employed for combating this disease. As the course is only held if eight entries are received, early application is desirable. There will also be a four weeks' course in Dermatology at the St. John's Hospital from June 2nd to 27th. From June 3rd to 25th eight clinical demonstrations will be given at the London School of Hygiene and Tropical Medicine. The subjects considered will be the more important diseases of tropical countries illustrated by cases in the hospital. There will also be a course in Gynæcology at the Chelsea Hospital for Women from June 8th to 27th, when opportunities will be afforded for attending operations, demonstrations in the out-patient department, and ward rounds. From June 8th to 20th, at the Victoria Park Hospital for Diseases of the Heart and Lungs, there will be given a special course consisting of lectures and demonstrations on Sunlight Treatment, Artificial Pneumothorax, the Electrocardiograph, &c. From June 15th to July 11th is a four weeks' course in Urology at the St. Peter's Hospital for Stone. A fortnight's intensive course in Medicine, Surgery, and the Specialties will take place at the London Temperance Hospital from June 22nd to July 4th. Copies of the syllabus of each of the foregoing courses and the programme of the Fellowship of Medicine may be obtained from the Secretary, at 1, Wimpole-street, London, W. 1.

VISIT OF AMERICAN DOCTORS TO DUBLIN. The arrangements for the visit to Dublin of the party of American doctors which is soon to tour Europe are nearly complete. So many of the visitors wish to include Ireland in their tour that it has been found necessary to divide the party into two, as the hotel accommodation in Dublin would be insufficient. According to present arrangements, the first party will reach Dublin on the morning of June 11th. On that morning the guests will attend at any of the city hospitals where the various surgeons will operate or exhibit cases, and the physicians will conduct parties through the wards. In the afternoon Prof. F. C. Purser will open a discussion on encephalitis lethargica, in which some of the Americans will take part. Next morning there will be a discussion on exophthalmic goitre, to be opened by Prof. T. G. Moorhead; Mr. C. H. Mayo has promised to take part in this discussion. In the afternoon the Governor-General is giving a garden party, and the visitors then depart for Belfast. The second party is to arrive on the morning of Saturday, the 13th, and will leave for Belfast on Monday afternoon, the 15th. On the Saturday morning Dr. G. FitzGibbon and Prof. J. W. Bigger will open a discussion on puerperal sepsis. At all the sessions there will be exhibitions of rare and interesting cases.

Lebanon Hospital for Mental Diseases, Syria. The annual meeting will be held at the rooms of the Medical Society of London, 11, Chandos-street, Cavendish-square, W., on Wednesday, May 27th, at 3.30 P.M. Dr. E. W. G. Masterman will be in the chair, and the speakers will include Sir Wyndham Deedes and *Pastor* Hoffmann de Visme (representing Switzerland).

Failure to Notify Small-pox.—For failing to notify that two of his children were suffering from small-pox a man, who was stated to be a confectioner, at Dukinfield, Lancs, on May 11th, was fined £5 and a daughter who assisted him was fined £1, the total amount of costs being £10 15s. It was stated in court that although the children had small-pox the defendants continued to bake and sell foodstuffs.

The late Mr. W. Percy Blumer, F.R.C.S.—The death occurred in London, on May 12th, of William Percy Blumer, F.R.C.S. Edin., at the age of 70. Mr. Blumer had an extensive practice in Sunderland before coming to London in 1911. He received his medical education in Edinburgh, at the University and the Royal Colleges, and qualified L.R.C.P. & S. in 1876, obtaining the F.R.C.S.E. in 1881. He settled in Sunderland, and for over 20 years was an honorary surgeon of the Sunderland Royal Infirmary. He also held the posts of honorary surgeon to the Monkwearmouth Hospital and to the Durham County and Sunderland Eye Infirmary. His contributions to medical literature include several papers on abdominal surgery in the medical journals, and in 1911 he described a case of albinism which was published in Pearson, Nettleship, and Usher's Monograph on Albinism in Man. Mr. Blumer leaves a widow and two daughters, his son having been killed in the war.

Medical Diary.

SOCIETIES.

ROYAL SOCIETY, Burlington House, W.

Thursday, May 28th.—4.30 P.M.—*Papers to be read:* R. J. Ludford: Cell Organs during Secretion in the Epididymis. (Communicated by Prof. A. V. Hill.) R. J. Ludford: Nuclear Activity in Tissue Cultures. (Communicated by Prof. A. V. Hill.) J. Needham and Dorothy Needham: The Hydrogen-Ion Concentration and the Oxidation Reduction Potential of the Cell Interior. A Micro-Injection Study. (Communicated by Sir Frederick Hopkins.) F. W. R. Brambell: The Oogenesis of the Fowl (Gallus Bankiva). (Communicated by Prof. J. P. Hill.)

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Monday, May 25th.

ODONTOLOGY: at 5.30 P.M.
At the Royal College of Surgeons, Lincoln's Inn-fields, W.C.
Annual General Meeting:
Election of Officers and Council.
Casual Communication:
Mr. E. W. Fish: Circulation of Lymph in the Dentine (preliminary report).
Exhibition:
Sir Frank Colyer: Specimens recently added to the Odontological Museum.

Tuesday, May 26th.

MEDICINE: at 5.30 P.M.
Annual General Meeting:
Election of Officers and Council.

Wednesday, May 27th.

COMPARATIVE MEDICINE: at 5 P.M.
Annual General Meeting:
Election of Officers and Council.
Paper:
Dr. J. H. Sequeira: Parasitic Affections of the Skin Communicated from Animals to Man.

Thursday, May 28th.

EPIDEMIOLOGY AND STATE MEDICINE: at 5.30 P.M.
Annual General Meeting:
Election of Officers and Council.
Death of Dr. Dudfield: Resolution to be moved by Senior Honorary Secretary.
Paper:
Dr. John Brownlee: The Health of London in the Eighteenth Century.

UROLOGY: at 8.30 P.M.
Annual General Meeting:
Election of Officers and Council.
Paper:
Mr. Winsbury White: Hydronephrosis.
(Mr. White will show his Hunterian specimens.)

MEDICAL SOCIETY FOR THE STUDY OF VENEREAL DISEASES, 11, Chandos-street, Cavendish-square, W.

Friday, May 29th.—8.30 P.M., Papers by Sir Henry Simson and Mr. Aleck Bourne on the Diagnosis and Treatment of Venereal Diseases in Pregnancy. A Discussion will follow.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

Monday, May 25th, to Saturday, May 30th.—West Lecture Hall, Royal Society of Medicine. Lecture arranged by the Fellowship of Medicine, and open to all members of the medical profession. At 5.30 P.M., Mr. G. Gordon-Taylor: The Prevention and Treatment of Shock in the Surgery of the Abdomen.—London Temperance Hospital, Hampstead-road, N.W. Special Post-graduate Course for Practitioners. Daily at 1.30 P.M., Clinical demonstration for one hour, followed by a lecture for half an hour. General medicine, surgery, and special departments (second week).—Infants Hospital, Vincent-square, S.W. Special Course in Diseases of Infants. Lectures and demonstrations every afternoon. "Round-table" Conference on Friday, and special visits on Saturday afternoon and Sunday morning.—Hospital for Diseases of the Skin, Blackfriars, S.E. Post-graduate Course in Dermatology, consisting of instruction in the Out-patient Department every afternoon, and a Venereal Clinic on Tuesday and Friday (second week).—Central London Throat, Nose, and Ear Hospital, Gray's Inn-road, W.C. Special Course in Laryngology, Rhinology, and Otology. Daily operations, lectures, and clinics. Morning and afternoon sessions. Operative surgery class every morning. Clinical and Operative Courses may be taken separately (second week).—Maudsley Hospital, Denmark-hill, S.E. Course in Psychological Medicine. Lectures on the Psychoneuroses, on the Practical Aspect of Mental Deficiency, on the Pathology of Mental Diseases: Demonstrations in Clinical Psychiatry and Clinical Neurology (second week).

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.

Monday, May 25th.—12 noon, Mr. Simmonds: Applied Anatomy. 2 P.M., Mr. Addison: Surgical Wards. 2 P.M., Dr. Scott Pinchin: Medical Out-patients.

Tuesday.—11 A.M., Mr. Endean: Venereal Diseases. 12 noon, Dr. Burrell: Chest Cases. 2.30 P.M., Mr. Tyrrell Gray: Surgical Wards.

Wednesday.—11 A.M., Medical Registrar: Medical Wards. 2 P.M., Dr. Owen: Medical Out-patients. 2 P.M., Dr. Dowling: Skin Dept.

Thursday.—11 A.M., Sir Henry Simson: Gynæcological Wards. 12 noon, Dr. Pritchard: Modern Methods in Medicine. 4 P.M., Dr. Dowling: Seborrhœa and Seborrhœic Dermatitis.

Friday.—11 A.M., Dr. McDougal: Electrical Dept. 12 noon, Surgical Registrar: Surgical Pathology. 2 P.M., Mr. Vlasto: Throat, Nose, and Ear Dept.

Saturday.—10 A.M., Dr. Saunders: Medical Diseases of Children. 10 A.M., Mr. Banks-Davis: Operations on Throat, Nose, and Ear.

Daily, 10 A.M. to 6 P.M., Saturdays, 10 A.M. to 1 P.M., In-patients, Out-patients, Operations, Special Departments.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

Tuesday, May 26th.—4.30 P.M., Mr. E. S. Pierrepont: Various Methods of Tooth Extraction.

Friday.—4.30 P.M., Dr. J. B. Alexander: Colitis.

Daily.—Clinics in General and Special Departments, Demonstrations, Operations, &c.

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, Leicester-square, W.C.

Tuesday, May 26th.—5 P.M., Dr. Gray: Sclerema Neonatorum.

Thursday.—5 P.M., Dr. Adamson: Lichen Planus.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.

Thursday, May 28th.—4 P.M., Dr. A. M. H. Gray: The Eczemas of Children.

ST. MARY'S HOSPITAL INSTITUTE OF PATHOLOGY.

Thursday, May 28th.—5 P.M., Dr. W. E. Gye: The Filterable Viruses.

CHADWICK PUBLIC LECTURES.

Monday, May 25th.—5.15 P.M. (at the Royal Society of Medicine), Dr. Emile Brumpt: How to Conduct an Antimalarial Campaign.

Friday.—5.15 P.M. (at the Royal Society of Arts), Dr. Emile Brumpt: The Prophylaxis of Sleeping Sickness.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen-square, Bloomsbury, W.C. 1.

POST-GRADUATE COURSE: MAY-JUNE, 1925.

CLINICAL LECTURES AND DEMONSTRATIONS.

MONDAY, May 25th.—2 P.M., Out-patient Clinic: Dr. Hinds Howell. 3.30 P.M., Optic Neuritis and Papilloedema: Mr. Williamson Noble.

TUESDAY, May 26th.—2 P.M., Out-patient Clinic: Dr. Walshe. 3.30 P.M., Fractures of the Skull: Mr. Donald Armour.

THURSDAY, May 28th.—2 P.M., Out-patient Clinic: Dr. Kinnier Wilson. 3.30 P.M., Disorders of Gait: Dr. Helen Russell.

FRIDAY, May 29th.—2 P.M., Out-patient Clinic: Dr. Gordon Holmes. 3.30 P.M., The Cerebro-spinal Fluid in Meningitis: Dr. Greenfield.

COURSE OF LECTURES AND DEMONSTRATIONS ON THE PATHOLOGY OF THE NERVOUS SYSTEM.

MONDAY, June 8th.—12 noon, The Neuron: Dr. J. G. Greenfield.

COURSE OF LECTURES AND DEMONSTRATIONS ON THE ANATOMY AND PHYSIOLOGY OF THE NERVOUS SYSTEM.

TUESDAY, May 26th.—12 noon, The Physiology of the Motor Systems: Dr. Walshe.

THURSDAY, May 28th.—12 noon, The Sensory System: Dr. Walshe.

Dr. H. J. Macbride will give a COURSE OF EIGHT CLINICAL DEMONSTRATIONS, chiefly on METHODS OF EXAMINATION OF THE NERVOUS SYSTEM, in the Wards at 10 A.M. on Tuesdays and Fridays, if sufficient entries are received. The fee for this Course will be £2 2s. (commencing Tuesday, May 19th).

Mr. Armour and Mr. Sargent operate at the Hospital on Tuesday and Friday mornings at 9 A.M., or at such other times as may be announced.

Any part of the Course may be taken separately. Special arrangements will be made for those unable to take the whole Course.

Fees should be paid to the Secretary of the Hospital at the office on entering for the Course.

J. G. GREENFIELD, Dean of Medical School.

UNIVERSITY OF LIVERPOOL POST-GRADUATE LECTURES. (At 3.30 P.M.)

TUESDAY, May 26th.—(At the Southern Hospital.) Dr. N. Chamberlain: Aneurysm of the Aorta.

WEDNESDAY.—(At the Northern Hospital.) Dr. Murray Bligh: Pleural Effusion.

THURSDAY.—(At the Stanley Hospital.) Mr. Heaney: Surgical Cases.

FRIDAY.—(At the Royal Infirmary.) Dr. D. Bigland: Medical Cases.

MANCHESTER ROYAL INFIRMARY.

TUESDAY, May 26th.—4.15 P.M., Dr. A. H. Holmes: Aneurysm of the Aorta.

Appointments.

CLOAKE, PHILIP, M.D., B.S. Lond., M.R.C.P. Lond., has been appointed Physician for Out-patients at the Queen's Hospital, Birmingham.

HORSBURGH, P. G., M.R.C.S., L.R.C.P. Lond., D.P.H., Medical Officer of Health, Nuneaton.

YOW, C. W., M.B., Ch.B. Edin., Ophthalmic Pathologist to the Royal Eye Hospital, Southwark.

University of Manchester: DUGUID, J. B., M.B., Ch.B. Aberd., Lecturer in Morbid Anatomy and Histology; SUSSMAN, W., M.D. Ontario, Assistant Lecturer in Bacteriology; MACGILL, ELSIE I., M.Sc., Research Assistant in Entomology.

Certifying Surgeons under the Factory and Workshop Acts: COLVIN-SMITH, R. C. M., M.B., B.Ch. Camb. (Cromer), ORR-EWING, A., M.B., B.Ch. Camb. (Silverton, Devon), ROBERTSON, W. G., M.B., Ch.B. Edin. (Lanchester, Durham), CASPER, W. M., M.R.C.S. Eng., L.R.C.P. Lond. (Overton, Flint).

Vacancies.

For further information refer to the advertisement columns.

Ayr, Hospital for Mental Diseases.—Jun. H.P. £300.

Beit Memorial Fellowships for Medical Research.—Jun. Fellowships. £350.

Birmingham, Public Health Dept.—Asst. Tuberc. and Sanatorium O. at rate of £500.

Blackburn County Borough.—Asst. M.O.H. and Asst. Sch. M.O. £600.

Cambridge, Addenbrooke's Hospital.—H.P. at rate of £130.

Cambridgeshire Tuberculosis Colony, Papworth Hall.—H.P. £100.

Cancer Hospital, Fulham-road, S.W.—H.S. at rate of £100.

Central London Throat, Nose, and Ear Hospital, Gray's Inn-road, W.C.—Out-patient Registrar.

Charing Cross Hospital, W.C.—Res. Anæsthetist at rate of £100.

Chelsea Hospital for Women, Arthur-street, S.W.—Sen. and Jun. H.S.'s at rate of £120 and £100 per annum respectively.

East Lancashire Tuberculosis Colony and Sanatorium, Barrowmore Hall, Great Barrow, near Chester.—Asst. M.O. £250.

Epsom, The Manor.—Jun. Asst. M.O. £110.

Essex Administrative County.—Sen. Clin. Tuberc. O. £750. Also Asst. Tuberc. O. £600.

Evelina Hospital for Children, Southwark, S.E.—H.P. £120.

Hackney Union Infirmary.—Jun. Asst. M.O. at rate of £350.

Harrogate Infirmary.—H.S. at rate of £150.

Hoo Rural District.—Part-time M.O.H. £60.

King's College Hospital, Denmark Hill, S.E.—Hon. Radiologist.

Kirkcaldy Hospital.—Res. M.O. at rate of £125.

Lambeth Parish Hospital.—Jun. Asst. M.O. £200.

Liverpool Hospital for Consumption, Mount Pleasant.—Vacancy on Hon. Med. Staff.

London Jewish Hospital, Stepney Green, E.—Asst. Surg. to Ear, Nose, and Throat Dept. Also Asst. Surg. in Gynaecological Dept.

Manchester Northern Hospital for Women and Children.—Sen. and Jun. H.S. £130 and £100 respectively.

Miller General Hospital, Greenwich-road, S.E.—Res. Cas. O. £150.

Monmouthshire County Council.—Asst. M.O. £500.

Oxford, Radcliffe Infirmary and County Hospital.—H.S. and Cas. H.S. Each at rate of £120.

Patna, India, Medical College.—Prof. of Pharmacology, Prof. of Anatomy, and Prof. of Physiology. Each Rs.1200 per mensem.

Queen Charlotte's Maternity Hospital, Marylebone-road, N.W.—Asst. Res. M.O. at rate of £80.

Rochester, St. Bartholomew's Hospital.—Res. H.S. at rate of £250.

Royal Free Hospital, Gray's Inn-road, W.C.—Asst. Cas. O., H.P. Also two H.S.'s.

Royal Northern Hospital, Holloway, N.—Two Asst. Surg. O.'s. Each £75.

Royal Waterloo Hospital for Children and Women, Waterloo-road, S.E.—Cas. O. £150. H.S. and H.P. Each at rate of £100. Also Hon. P. and Asst. in X Ray Dept.

St. Helen's Hospital, Lancashire.—Res. M.O. £250.

St. Marylebone Hospital, Ladbroke-grove, W.—Third Asst. M.O. £300.

St. Paul's Hospital for Skin and Genito-Urinary Diseases, Endell-street, W.C.—Res. M.O. Locum. £10 10s. weekly.

Scarborough Hospital and Dispensary.—H.S. £120.

Sheffield Royal Hospital.—Res. Surg. O. £200.

South London Hospital for Women, South Side, Clapham Common, S.W.—Asst. P.

Victoria Hospital for Children, Tite-street, Chelsea, S.W.—Hon. P. to Out-patients.

West London Hospital, Hammersmith-road, W.—H.P., H.S., Aural H.S., and Res. Cas. O. Each at rate of £100.

Windsor, King Edward VII. Hospital.—R.M.O. £200. Also Jun. H.S. at rate of £100.

The Chief Inspector of Factories, Home Office, London, S.W., announces a vacant appointment at St. Just, Cornwall.

Births, Marriages, and Deaths.

BIRTHS.

BROSTER.—On May 13th, the wife of L. R. Broster, M.Ch., F.R.C.S., of Wimpole-street, W., of a daughter.

DEATHS.

BALY.—On May 16th, at the Medical Superintendent's House, Lambeth Hospital, Charles Baly, retired dental surgeon, late of Harley-street, aged 79.

BLUMER.—On May 12th, at a nursing home in London, William Percy Blumer, F.R.C.S. Edin., late of Muswell Hill and Sunderland, aged 70 years.

CHRISTOPHERSON.—On May 11th, Cecil Christopherson, surgeon, of St. Leonards-on-Sea.

GILLINGHAM.—On May 15th, at High-road, Chiswick, Alfred Gillingham, M.R.C.S., L.R.C.P., aged 77.

TOOTH.—On May 13th, at The Mount, Hadleigh, Suffolk, Howard Henry Tooth, C.B., C.M.G., M.D., F.R.C.P., late of Harley-street, aged 69.

WILSON.—On May 8th, at York, J. P. A. Wilson, F.R.C.S. Edin., late Principal Medical Officer, Johore, aged 66.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

THE King has approved of the reappointment of Sir David James Galloway, M.D. Edin., to be an Unofficial Member of the Executive Council of the Straits Settlements.

BATH: OPENING OF ULTRA-VIOLET RAYS DEPARTMENT.—On May 16th the new ultra-violet rays department at the Royal Baths, Bath, was opened by Dr. Leonard Hill, who spoke of the now recognised value of artificial sunlight in combating the many ailments of our smoke-bound islands, and described the action of the ultra-violet rays. Speaking of the importance of sun and air in hospital treatment, Prof. Hill said the idea of a hospital of five or six stories was out of date. Hospitals should be built on the bungalow plan, where the patients could be run out on to a verandah or on to a grass plot. The Mayor of Bath, Alderman C. Chivers, J.P., presided at the ceremony and among the guests were many medical men. Councillor C. H. Hacker moved a vote of thanks to Dr. Hill, which was seconded by Dr. Gordon F. Thomson.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

Contributory Pensions Bill.

Mr. N. Chamberlain, Minister of Health, in moving the second reading of the Widows', Orphans', and Old Age Contributory Pensions Bill on Monday, May 19th, said it lay in the direct succession of a long line of measures passed during the past 30 years all founded on the fact that a state of society in which a large part of the population no longer themselves produced the necessaries of life, but depended on continuous employment in other occupations to obtain the means of purchasing—a state of society which involved constant menace and risk to the security of the worker—involved a corresponding need for providing against that risk. Every one of those Acts had been extended and expanded. Taking all those measures together, they effected in a short space of time a profound and revolutionary change in the status of the workers of this country. But there still remained one gap in the chain—one link missing, because although the widow of a man who had lost his life in pursuing his trade or occupation was now provided for, accidents of that kind were fortunately so rare that with the possible exception of the mining industry they hardly entered into the calculation of the ordinary individual. There was undoubtedly something very attractive in the idea that they should have one single contribution on one single card which would entitle the contributor to all the benefits comprised in the existing scheme of national insurance combined with workman's compensation, widows' pension, and old age pension at an earlier age. But though the Government had given serious and prolonged consideration to this point they had come to the conclusion that it was impossible to include workman's compensation. For reasons of economy it was obviously undesirable to set up new machinery, and the Government had chosen to link up the new scheme with health insurance chiefly on the ground that health insurance covered so much wider a field than unemployment insurance. And so the new scheme was interlocked with the National Insurance Act. They proposed to invite the assistance of the approved societies in providing certificates by virtue of which a man would become entitled to benefits. The pensions would be paid through the Post Office, and it was not anticipated that the cost of administration would be more than 2 per cent. of the contributions. Section 3 of the National Health Insurance Act dealt with medical benefits. Under that Act a person who was insured and had reached the age of 70 was entitled to free medical benefit for the rest of his life. But supposing he had only reached the age of, say, 65 and ceased to be employable, and therefore passed out of insurance, he lost the right to medical benefit. That was a considerable grievance, and the present Bill allowed that to be amended by providing that in future insured persons who reached the age of 65 would have the boon of medical benefit for the rest of their lives. The persons who were not insured at all were left out of the scheme not on any ground of principle, but because they could not find any way of fitting them in. It was estimated that in the first ten years the burden which this scheme would impose upon employers would amount to £10,250,000 a year, not a sum which he thought they would trouble about much if it stood by itself, but it had to be taken in conjunction with the already heavy burdens of taxation, Imperial and local, and all the other social services which they had to meet. But he believed that every employer would agree that the psychology of the workman had a very marked effect upon his output. If that were so surely employers ought to welcome this scheme which did so much to provide against one or more of those contingencies which were most dreaded by their workmen. This scheme would reduce unemployment by getting the older men and women out of industry. He had made inquiries and his department estimated that there would be an immediate relief to the rates of something like £3,000,000 a year which would gradually rise until it got to something like £7,000,000—a substantial relief. The Government's policy was to use the great resources of the State not for the distribution of an indiscriminate largesse, but to help those who had the will and desire to raise themselves to higher and better things. That policy was embodied in the Housing Act of 1923 and also in the present Rating and Valuation Bill, where for the first time they were trying to set up a standard by which they could measure the ability of local authorities to bear their burdens and the need they might have of assistance from the central authority. They would also find this principle in the measure which he hoped to introduce next year for the reform of the Poor-law, and for the more scientific and equitable distribution of public assistance.

Mr. Wheatley moved:—

"That this House, while it would welcome a just and generous scheme of widowed mothers' and orphans' pensions with a reduction of the age of qualification for old age pensions and the removal of the means limit, declines to give a second reading to a Bill which exacts contributions from wage-earners and imposes an additional burden on industry, makes no provision for a large number of widows and orphans and families where the father is incapacitated and, in the case of those qualified to become recipients, provides allowances which are wholly inadequate."

Speaking in the adjourned debate on the following day, Lieut.-Colonel Fremantle said that while in the meantime he supported this magnificent measure of social reform he felt that they were wasting money by giving pensions rigidly to those who were 65 years of age. This point was likely to be of some importance in the future. The Government's Actuary's tables were based on the state of life tables and the mortality rates were diminishing every year. They were likely to go on diminishing for some time. In the course of the next 40 years the number of people between 65 and 70 years of age would have nearly doubled. Not only had the expectation of life increased, but the length of working life had also been increased. He foresaw a future time when people would live to 90, 100, or more. What was the position going to be then? The present pension scheme permanently threw people out of work at 65. He was sure that in future the pension scheme ought to be on a disability basis. Just as they had in the war disability decided by a board, so in civil life disability should be decided by a medical board, diluted by such other elements as might be required. It should, however, be a professional technical board to decide disability.

The amendment was rejected by 401 votes to 125 and the Bill was read a second time.

HOUSE OF LORDS.

Tuesday, May 19th.

Procedure in Coroners' Courts.

Lord Darling raised the question of the procedure in coroners' courts and called attention to the not infrequent practice of holding inquests on the bodies of deceased persons simultaneously with the hearing by justices of charges against persons arrested and accused of causing the death of the same deceased persons. He suggested that if at any inquest the coroner was informed, before the jury had given their verdict, that some persons had been charged before the justices with murder or manslaughter of a dead person, then, in the absence of good reason to the contrary, it should be the duty of the coroner to adjourn the inquest. When the whole case had been thoroughly investigated and brought to an end, a merely formal meeting of the coroner and his jury would result in returning a verdict which would have no effect beyond regularising the proceedings.

The Lord Chancellor agreed that a certain amount of mischief ensued at present in these cases, and as the practice was that one witness of the tragedy might have to give his evidence no less than four times, great expense was involved, while the case of the accused man was sometimes prejudiced because the inquest took place while the police court proceedings were going on. The Government proposed to introduce a Bill dealing with the whole question of coroners, and a number of other matters which had arisen in connexion with inquests. The Bill would be found to contain a clause very much to the effect suggested by Lord Darling. The Bill was ready, and was only awaiting approval by some local authorities in connexion with financial matters. He hoped that within a very short time the Bill would be introduced and passed into law.

HOUSE OF COMMONS.

Wednesday, May 13th.

Wages and National Health.

Mr. Morgan Jones moved that, "in view of the practically universal acceptance of the principle that a living wage for all workers should be the first charge upon industry, and in view of the large measure of agreement with respect to the advisability of fixing legal minimum time rates of wages reached at the National Industrial Conference, this House urges the Government to proceed without delay with the Bill introduced by the Government of the day of 1919, constituting a commission to inquire into and report upon legal minimum time rates of wages."

Mr. John Baker seconded the motion.

Dr. Haden Guest, in supporting the motion, said he wished to place before the House certain purely medical considerations, certain considerations dealing with human life, and certain considerations dealing with wages which he suggested should be taken into account when considering how a minimum wage was to be calculated. They were all familiar with the appeals for funds made by the numerous hospitals in London. During the last few days they had been distressed to learn that the Middlesex Hospital was in a very bad position and needed a large sum of money. If they added to the money spent upon the voluntary hospitals the money spent upon Poor-law infirmaries and on medical relief through the Poor-law, and further the amount spent upon clinics of one sort or another, they arrived at a sum running into many millions a year. A large part of that expenditure was part of the price the country had to pay for compelling men to live on low wages. If hon. Members would go to Guy's Hospital, which derived a large proportion of its patients from occupations where there was casual employment and low wages, they would see how those people suffered directly from the effects of underpayment and insufficient food. In his own experience in connexion with school clinics in London he had found the same thing. The figures went down during the war because separation allowances were being paid and for the first time in their lives—and apparently for the last time—a large number of people were receiving regularly week by week a definite amount of money, with the result that there was a great diminution of illness among children and a consequent decrease in the cost of treatment by the London County Council, the largest educational authority in the country. A large amount of what was called mental as well as physical deficiency had its origin in poverty. Those mental and physical defectives, when they reached adult age, were in one way or other a charge upon the community. He did not wish to exaggerate or to suggest that all these cases were due directly to the underpayment of the fathers and mothers of the patients, but a considerable proportion undoubtedly were so. He judged that the country paid a great deal more for the cost of medical treatment year by year than would make up the wages paid in industry to a decent minimum wage. Some employers had good intentions, but other employers had anything but good intentions, and, what was worse, they were simply indifferent to the economic effect of their enterprises on the workers. He confessed that he never felt more revolutionary than when he went down to his own clinic in Blackfriars and saw the children coming up for treatment—children who presented the same kind of illnesses, malformation and bad development as when he began his work there 18 years ago. Those children had good fathers and mothers, so far as morals and care of their children were concerned, but they earned so little that they could afford but a bare minimum of room, and a bare minimum of food, and only just sufficient clothing to keep their children decent enough to send to school. Almost as regularly as they went to school such children had to visit a doctor for maladies which were absolutely preventable. Years ago the medical officer of health for Essex made a detailed investigation of the deaths from measles in the county, and he found that while that death-rate was high for the county as a whole it was confined to children of the working classes. The terrible death-rate from infantile illnesses, from tuberculosis, and generally the illnesses that were indices of poverty, fell almost entirely on the lives and homes of poor people who were underpaid under our present system. He hoped that the inquiry sought for in the motion would be granted, and that when it was attempted to define the level of a minimum wage consideration would be given to medical and physiological questions which men and their families required.

Mr. Betterton (Parliamentary Secretary to the Ministry of Labour) said that the policy of the Government was that they adhered to the principle that the gross evil of sweating must be prevented, and they endorsed the view reached unanimously by the Committee presided over by Lord Cave that the Trade Board system was necessary for this purpose. But while the Trade Boards Act would be extended it would only be extended to new trades where it had been clearly ascertained by systematic investigation that conditions of sweating prevailed. If powers were entrusted to any body of men, however faithfully they might attempt to discharge their duties, to fix a minimum wage for every industry in the country, so far from producing anything like contentment and peace it would produce an outcry and uproar of which they could form but a dim notion. In the view of the Government, therefore, it was impossible to accept the resolution.

The motion was rejected by 227 votes to 132.

Night-Work in Bakeries.

Lord Henry Cavendish-Bentinck asked the Minister of Labour whether the British Government delegates to the International Labour Conference at Geneva this month had been instructed to move an amendment to the present draft on night-work in bakeries that would enable them, if carried, to vote for the convention.—Sir A. Steel-Maitland replied: The Government have tabled certain amendments to the draft convention on night-work in bakeries, and have informed the International Labour Office that subject to these amendments being carried they would be disposed to accept the Convention, provided they could be satisfied that the effect of its adoption would not be to cause an increase in the price of bread to the consumer. Since that time the Royal Commission on Food Prices has examined this question and in view of its findings the delegates will state that the Government is unable at the present time to ratify the draft Convention.

THURSDAY, MAY 14TH.

Coroners and Inquests on Motor Accidents.

Rear-Admiral Beamish asked the Home Secretary if he was aware that considerable dissatisfaction existed in consequence of inquests on persons killed by motor vehicles being held without a jury; and could he see his way to introduce legislation compelling coroners to empanel a jury at every inquest into the death of a person as the result of a road accident.—Sir W. Joynson-Hicks replied: The subject has engaged my attention, and provision will be included in the new Coroners' Bill.

Education of Blind and Crippled Children.

Mr. Groves asked the President of the Board of Education the number of blind and crippled children, respectively, throughout the country for whom no educational provision is made; and what action he proposed to take with local educational authorities who refused to meet their obligations in this matter.—Lord E. Percy replied: According to the returns of local authorities in England and Wales for the year ended Dec. 31st last, there were 567 blind children (including 287 partially blind) and 4301 crippled children (other than those suffering from active non-pulmonary tuberculosis) attending no recognised school or institution during the year. I may, perhaps, mention that large numbers of the crippled children not at present in special schools do not need to attend such schools, but rather require orthopædic treatment which will enable them to continue in attendance at ordinary public elementary schools, and I am taking all practicable steps to encourage the development of such treatment. As regards special school accommodation for blind and crippled children who need it, I have already asked all authorities to give their careful attention to the problem and to inform me what progress they are making.

Clinics for Physically Defective Children.

Mr. Groves asked the President of the Board of Education the number of local education authorities who had not established clinics for the treatment of physically defective children; and what action he proposed to take if those authorities continue to refuse to make adequate arrangements.—Lord E. Percy replied: Out of 318 local education authorities only seven have not yet provided any school clinics, and of these seven, five have submitted proposals which are now before my department. One of the remaining two cases is that of a small area where no clinic is required, and in the other case the authority have been requested to give the matter their urgent attention. I do not, of course, desire to suggest that in all cases the arrangements made in this respect are entirely adequate.

Mr. Paling asked the President of the Board of Education what provision was made by the West Riding (Yorks) county council education authority for the training of mentally defective children of school age; and whether such provision was sufficient to meet the needs of the area.—Lord E. Percy replied: According to returns furnished by the West Riding local education authority for the year 1921, there were in the area 528 children ascertained to be mentally defective within the meaning of the Education Act, 1921. The local authority have no school of their own for mentally defective children, but they have sent 23 children to special schools certified by the Board.

X Ray Examination and National Insurance.

Mr. Basil Peto asked the Minister of Health whether his attention had been called to the fact that the assistance of X ray examination was not one of the benefits provided under the National Health Insurance Act; and, seeing that this was now essential to correct a diagnosis in many cases, and in view of the fact that the development of radiography was approximately coeval with the Act, he would amend the Act to give the advantages to insured persons. Mr. Smithers asked the Minister of Health a similar question.—Mr. N. Chamberlain replied: Payment for an X ray examination can at present be made under the National Health Insurance Act only where the examination is incidental to a service, such as dental or hospital treatment, made available to members under an approved society's scheme of additional benefits. The question of any extension or development of the benefits of the Act is now under consideration by the Royal Commission on National Health Insurance to whom I am forwarding my hon. friend's suggestion.

Butter for Asylum Inmates.

Colonel Day asked the Minister of Health whether he was aware that the Metropolitan Asylums Board had recently decided to discontinue the supply of butter to inmates during the summer months on the ground that, whilst butter contained the vitamins necessary for bodily health, this form of food was to be omitted during the summer months as sunshine supplied the vitamins required; and would he recommend that the allowance of butter be continued irrespective of season.—Mr. N. Chamberlain replied: I am advised that the use of margarine is quite compatible with a good diet, provided that the other constituents of the diet are satisfactory; and that the dietary adopted by the Metropolitan Asylums Board satisfies this condition, and further makes adequate provisions for adjusting the diet to suit the needs of any particular case. In these circumstances, I could not properly intervene in the manner suggested.

Inequalities in Insurance Benefits.

Mr. Kelly asked the Minister of Health if he was aware of the inequalities which would arise on July 6th, 1925, as a result of the division of the valuation of approved societies under the National Health Insurance Acts into two sections, whereby that section whose valuation took place in 1922 would be in a position to distribute additional benefits, if any were due, to their members a year in advance of the societies valued in 1923; and could the question be considered of postponing the coming into operation of the additional benefits declared in respect of societies valued in 1922, so that all additional benefits of all societies would come into operation on the same date, thus removing inequalities.—Mr. N. Chamberlain replied: Such inequalities as are suggested in the question are merely temporary, and the present arrangement has been agreed to by the consultative council which is representative of approved societies as being the best method of procedure and for the valuation of some 9000 societies and branches. As regards the second part of the question, the work in connexion with valuation and the preparation of schemes by approved societies necessitates an interval of 2½ years to elapse between the date of valuation and the date on which members begin to enjoy the additional benefits provided as the result of the valuation, and I do not think it desirable that this interval should be prolonged by another year.

Pay of Officers in the R.A.M.C.

Colonel Day asked the Secretary of State for War whether any difficulty had been found in recruiting doctors into the Royal Army Medical Corps on account of the poor rates of pay offered qualified medical men; had any increase on the standard rates now operating been considered; and, if so, what was the scale of pay suggested.—Sir L. Worthington-Evans replied: The number of candidates for commissions in the Royal Army Medical Corps has declined owing to a variety of causes. Proposals regarding the rates of pay of medical officers are being considered, but I am not at present able to give details.

MONDAY, MAY 18TH.

Pay of Medical and Dental Officers in India.

Major-General Sir Richard Luce asked the Under Secretary of State for India if the married officers of the Royal Army Medical Corps, the Royal Army Veterinary Corps, and the Army Dental Corps, serving in India, were still excluded from the increased pay and allowances, including quarters, recently granted to other branches of the British Army, by which exclusion a major of the Royal Army Medical Corps received 75 rupees per month less than a senior captain of the Royal Engineers, and five rupees less than a captain of the Royal Army Service Corps; and if he would assure the House that members of these three services would not eventually suffer by reason of the delay involved in the consideration of their case.—Earl Winterton replied: The case of the services mentioned has been reserved for separate consideration in view of the possibility of changes affecting them in the near future. If the examination of the cases reveals sufficient grounds, increases will be given from such date as may be appropriate.

Statutory Vaccination Declarations.

Mr. Groves asked the Home Secretary if his attention had been called to the refusal of certain magistrates to witness statutory declarations under the Vaccination Acts; and would he follow the precedent of one of his predecessors and circularise all magistrates, calling their attention to their legal obligations to witness statutory declarations when sitting in open court, and expressly pointing out to them that they were neither required nor authorised to cross-examine applicants as to the reasons for their objections but that their conscientious objections were sufficient.—Mr. Locker-Lampson (Under Secretary to the Home Office) replied: Yes, Sir, on March 17th my right hon. friend received a deputation from the National Anti-Vaccination League which made representations to him on the subject. After carefully considering the particulars submitted by the League, he came to the conclusion that no case had been made out for the issue of a circular to justices. The Home Secretary does not, therefore, propose to issue one.

TUESDAY, MAY 19TH.

Danger of Infant Foods.

Mr. Groves asked the Minister of Health whether he would consider the possible danger to infant life arising from the sale of proprietary infant foods consisting largely of starch and flour; and whether he would introduce regulations governing the sale of such foods, in view of the fact that he had issued instructions controlling the sale of dried milks.—Sir Kingsley Wood replied: My right hon. friend is sure that misleading claims are sometimes made as to the value of infants' foods, consisting largely of starch, but he is not satisfied on the information at present before him that there is sufficient evidence of danger arising to public health to justify the issue of regulations at the present time.

Mr. B. Smith asked if the hon. gentleman would circulate through the medical side of the Ministry of Health the names of the applicants who largely embodied starch in so-called foods.—Sir Kingsley Wood replied: I do not see the necessity to do that. The consumption of these proprietary foods is decreasing.

The Sale of Patent Medicines.

Colonel Day asked the Minister of Health whether his attention had been drawn to the dangers arising from the unrestricted sales of certain patent medicines, where the manufacturers were not compelled to state the composition of the products bearing their labels; whether he proposed to take any action in the matter to further protect the public; and would he introduce legislation to compel all manufacturers of patent medicines to state plainly on the labels of medicines sold the ingredients contained in them.—Sir Kingsley Wood replied: My right hon. friend fully appreciates the importance in the interest of public health of securing some statutory regulation of the conditions under which patent medicines are advertised and sold, but in the present state of business he does not anticipate that it will be possible to introduce legislation on this subject during the present session.

Panel Doctors' Fine.—Our Manchester correspondent writes: The decision of the Ministry of Health to waive more than half of the fine of £1000 imposed on two medical men at Tottington, Lancs, for breaches of the panel regulations has produced a good impression here. It is understood that £150 has already been deducted from the quarterly remuneration of the doctors in payment of the fine. The Ministry, in intimating its decision to the Lancashire Insurance Committee, states: "Regard has been paid to the fact that the practitioners have expressed regret for the breach of the terms of service and have undertaken to observe them carefully in future. Also weight has been given to the consideration that the action taken in this case has been sufficient to make clear the very serious view taken of the practice of charging fees to insured persons for treatment which practitioners are bound to render free of charge."

International Congress of Radiology.—The preliminary programme for this Congress, which will be held in London from July 1st to 4th, has reached us. The number of papers to be read is large and the list of those taking part is representative of workers in all countries. The work of the Congress will be divided into three sections—namely, radiology, physics, and electrotherapy and physiotherapy. The radiology section will probably meet in two parallel sessions each day, the subjects for this purpose being divided into those bearing on diagnosis and those bearing on therapy. On the opening day the sections of radiology and physics will meet in joint sessions for a discussion on the standardisation of dosage, which will be opened by Prof. W. Bragg from the physical standpoint, and by Dr. Béclère, of Paris, from the medical. On the evening of that day the Silvanus Thompson Memorial Lecture will be delivered by the Duc de Broglie, of Paris, his subject being Absorption of *X* and *Y* Radiations and the Secondary Radiations which Accompany Them. On the second night a Congress dinner will be held, and on the third night Sir Berkeley Moynihan will deliver the MacKenzie Davidson Memorial Lecture, his subject being the Relationship of Radiology and Surgery. Further details will be published shortly.

Notes, Comments, and Abstracts.

THE AUXILIARY HOSPITAL.

ITS FINANCIAL ASPECT AND THE EXTENT TO WHICH IT CAN RELIEVE PRESSURE UPON PARENT HOSPITAL BEDS [*]

BY F. N. KAY MENZIES, M.D., F.R.C.P. EDIN.,
DIRECTOR OF HOSPITAL AND MEDICAL SERVICES,
JOINT RED CROSS COUNCIL;
AND
R. H. P. ORDE, B.A.

THE outstanding characteristic of an auxiliary hospital (or recovery home) by contrast with what we may conveniently call the parent hospital is that it is an institution to which patients can properly be sent for whom it is no longer necessary and, in fact, uneconomic, to continue under treatment in the parent hospital; but who for medical reasons are unfit to be sent either to a convalescent home or their own homes. Generally speaking, auxiliary hospitals are best situated in the country or at the seaside, and are much less costly from the point of view of buildings, staff, equipment, and cost of maintenance than the parent hospital; although, on the other hand, for similar reasons, they are more costly in all these respects than what are commonly called "convalescent homes."

The type of patient to be admitted to such an institution is illustrated by the schedule of cases. Out of a total number of cases transferred (402) from a parent hospital during the months December, 1924, and January and February, 1925, we have selected the following as typical:—

Pneumonia..	33	Nephritis	9
Alimentary ulcers:		*Rheumatism*	9
Gastric, pyloric, duodenal	24	Gall-bladder	8
Appendicitis	66	Wounds and bruises	7
Heart conditions.	16	Fractures	9
Debility	7	Gynaecological	23
Gastritis	7	Ear, nose, and throat ..	42
Tuberculous	15	Eye	13

Reported Shortage of Hospital Beds.

Practically every local voluntary hospital committee in *England and Wales has reported that additional voluntary hospital accommodation* is needed, although, *as might be* expected, the kind of institution and the additional number of beds required, as well as the type of disease for which there is a deficiency of accommodation, vary very considerably. The outstanding fact which emerges from a consideration of *all* these *reports* is that some thousands of additional hospital beds are said to be required in England and Wales, taken as a whole. It is surely well worth while making careful inquiry into the question as to which is the cheapest way in which this additional accommodation *can* be provided from the point of view of: (*a*) Capital expenditure; (*b*) cost of maintenance; (*c*) the best interests of the patient. A number of witnesses giving evidence *before* the Scottish Commission have recommended the provision of auxiliary hospitals, in order to relieve the pressure upon the parent hospitals. On the other hand, in England *one* of the largest and most important of the local voluntary hospital committees has expressed the following view:—

> The provision of recovery *beds*, where patients receive hospital treatment and not convalescent home treatment, does increase the number treated, to approximately the same extent as the provision of an equal number of additional beds on the *site of* the parent hospital. The idea that extension by recovery beds is cheaper than *extension* by hospital beds rests almost wholly on an illusion. Recovery beds may cost £2 2*s.* a week, while beds in the parent hospital cost £5 5*s.* a week. But this is only because the cost of a hospital bed, where there are no recovery beds, includes all the stages of treatment, whereas, if there is a recovery branch, the hospital beds are confined *to the more* expensive stages and the recovery beds to the less expensive. Thus, if the *cost of the single institution averages £4* a week, this is made up of so many days averaging (say) £6 a week, so *many* averaging £5, so many averaging £3, and so many averaging £2. If the whole of the days averaging £3 and £2 a week are spent at a recovery branch, the average cost at that branch may well be between £2 and £3 a week, while the *average* cost at the parent hospital rises to between £5 and £6. But this does not mean that the *combined average* cost has altered in the least.
>
> There may be a saving in capital expenditure and in some items of maintenance, but, on the other hand, there will be *some extra* cost of separate administration and of transport.
>
> The advantage of a recovery branch, as compared with extension on the hospital site, lies, therefore, solely in the benefit to the individual patients, not in any *increase* in the number treated for the same amount of money.

It will be seen that this Committee is of the opinion that altogether apart from questions of capital expenditure and extra cost of separate administration and transport, there would be no economy in so *far as maintenance* is concerned, if the additional hospital accommodation needed is provided by means of auxiliary hospitals rather than by the addition of a similar number of parent hospital beds.

Real and Apparent Shortage.

Before considering the comparative cost of *maintenance*, there are two important questions which should be borne in *mind, viz.*: (1) *To what extent are beds in* parent hospitals now occupied by patients who have reached a stage in their treatment when they may be expected to progress towards recovery equally well, if not indeed more rapidly, at auxiliary hospitals situated in the country or at the seaside. (2) *To what extent would there still be a real shortage of* beds in our parent hospitals, if all those patients found suitable on medical grounds for transfer to auxiliary hospitals were so *transferred at the earliest* possible date.

These two questions must be answered before even an approximate estimate of the real shortage of beds in our voluntary hospitals in this country can be arrived at.

There should be no difficulty in arriving *at an answer to* the first question. If a careful investigation of all the beds occupied in our general and special hospitals were to be made *by competent persons, it would be found that there are* always some beds occupied by patients for whom the parent hospital has done all that can reasonably be asked of it. *They have not been discharged for one of two reasons:* (1) The patient is not yet really fit enough to go direct home or to a convalescent home; (2) there is no other suitable *institution to which the patient can be sent, for the* convalescent home, as a rule, is not built, equipped, or staffed in such a way as to be able to relieve the parent hospital of the type of case at the stage of treatment which we have in mind. If then it be true that there is a certain wastage or uneconomic use of beds in the parent hospitals, and this wastage can be reduced by the provision of an equally *suitable type of institution, called an auxiliary hospital*, then it is surely of first-rate importance to make a careful inquiry into the accuracy of the statement that "the idea *that extension by recovery beds is cheaper than extension by* hospital beds rests almost wholly on an illusion."

The second question is more difficult to answer. In each area the conditions vary *sometimes* considerably and calculations based upon 2, 3, or 4 beds per 1000 of the population have a very limited value. Waiting lists, however carefully kept, *although useful*, cover a comparatively small portion of the ground. Experience has taught us all that in cases where additional hospital accommodation of one kind or another is provided, a most surprising demand for such accommodation springs up from all kinds of unexpected quarters. Consideration also has to be given to the extent to which public health authorities and Poor-law guardians in various parts of the country are fulfilling their statutory obligations.

Is the Alleged Economy of Recovery Beds Illusory?

Is it true to say that the idea that extension by recovery beds *is cheaper than extension* by hospital *beds rests wholly* on an illusion? This is the considered opinion of a committee which represents an area containing some 12,000 to *13,000 beds, and in which there is an estimated shortage of* 2000 beds. There are two methods under consideration, by which this shortage can be met: Scheme A—By adding, *to the existing hospitals, wards containing beds to the* required number. Scheme B—By providing 2000 beds in homes of recovery in neighbouring country districts.

¶ [*The authors here examine these alternative methods* in some detail and conclude:]

It appears from the figures we have obtained, that the effect of *converting 15 per cent. of the beds of a hospital* from a three-week to a two-week service upon the average weekly cost of each patient is by no means so great as is suggested *in the paragraph which we have quoted.* If our conclusion is correct and we apply it to the area in question, the costs under Scheme A and B work out in this way:

	£	s.	d.	Per week.
Scheme A.				
13,000 *existing* beds.				
2,000 additional hospital beds.				
15,000 at average cost of £3 per patient per week				£45,000 0 0
Scheme B.				
13,000 existing beds at a cost of £3 1*s.* 1½*d.* per patient per week	39,731	5	0	
2,000 *beds in recovery homes* at £2 per patient per week	4,000	0	0	
				£43,731 5 0
Or a weekly saving of ..				£1,268 15 0

Equal to £65,975 per annum.

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[*] Abstract of a paper introducing a discussion at the Annual Congress of the Incorporated Association of Hospital Officers on May 15th.

If in place of a weekly average cost of £3 in the main hospital, a weekly average cost of £3 10*s.* is assumed, the saving on Scheme B as compared with Scheme A amounts in each week to £2211 11*s.* 8*d.*, or £115,158 6*s.* 8*d.* per annum. Such data as are available tend to show that there is at least prima facie evidence in favour of the "idea" which has been described as illusory. We are indeed unable to accept the view that expenditure at a parent hospital rises with the rapidity of the passage of the patients through its beds, at such a rate as to balance the lower cost of the beds in an auxiliary hospital. We hold that the unavoidable expenditure, at every large and expensively staffed and equipped general hospital, that is altogether independent of the stage of treatment of a patient, or even of the occupation of the bed at all, far outweighs any differences in cost between first, second, or third weeks of treatment. At the same time, even if it should be true that the "idea" to which we have so often referred, rests on an illusion, it by no means follows that extension by auxiliary hospitals is an economically illusory proposition.

The Economic Use of Parent Hospital Beds.

It has been well said, by the committee already referred to, that "the addition of a recovery branch centres in the parent hospital a larger number of patients who need expensive methods of diagnosis, operations, and other early stages of treatment, and thus enables fuller use to be made of the highly specialised staff and apparatus, thereby reducing cost and increasing efficiency of service. But this result is only produced if the staff and apparatus are not already fully employed, and in that case would be produced by the addition of beds on the hospital site."

What meaning, however, are we to attach to the words "fully employed"? for upon this depends almost entirely the case for or against the auxiliary hospital. The modern parent hospital is so situated, built, staffed, and equipped that cost is only reduced to a minimum and efficiency raised to a maximum when it is engaged upon work of a highly specialised character. Any individual bed, therefore, occupied by a patient who no longer requires the services which only such a hospital can give is being used uneconomically. The bed is employed, it is true, but not *fully employed* in the economic sense. Can it be said of any large general hospital that there are no patients in its beds who could not, without detriment to their treatment, be transferred to auxiliary hospitals if such existed?

In the 12 large general hospitals in London with medical schools, the average number of days each patient was resident during 1923 was 19·57, and the variations ranged from 26·10 to 11·11. It is noteworthy that at the hospital in which the average stay was 11·11 a recovery branch has *been established, and that the combined cost per occupied* bed at this hospital and its home of recovery is nearly £3 a year lower than at the parent hospital itself.

In the 11 provincial hospitals with medical schools, the average length of stay of a patient varied during 1923 from 27·98 to 15·05 days. It is a fact that at the hospital at which the stay was 15·05 days, a return was made of the total number of days of residence of seven long-stay patients. This total was equal to the time necessary for the treatment of 10 patients suffering from hernia or hæmorrhoids. The long-stay patients were retained because there was no accommodation available to which they could be sent, and for no other reason. It is hardly possible to imagine a more uneconomic use of parent hospital beds.

In Scotland, at the six large hospitals with medical schools the average length of stay of a patient varied from 25 to 20·29 days.

The character of the work undertaken at these large hospitals throughout the country and the scale upon which they are staffed and equipped, does not explain the variations in length of the patient's residence. Even if we assume that at those hospitals in which the average stay approximates two weeks the staff and apparatus is already fully employed in the true economic sense, we cannot assume the same with regard to those at which the length of stay is a week or 12 days longer. Indeed, it is common knowledge that even at the busiest hospitals a surgeon frequently retains a patient in his ward simply because there is no suitable accommodation to which he can be discharged, and not because to admit another patient in his place would be to throw too great a load upon himself or the staff of the hospital.

The economic use of operating theatres, such as are provided at all large parent hospitals, is limited by the number of beds available for patients operated on, and if any of these are occupied by those who could be transferred to a recovery branch, the theatre is not being used to its fullest possible extent, and so with all the other specialised buildings and departments. When the point has been reached, by means of recovery branches, at which the beds of a parent hospital are being used to their fullest extent for the purpose for which they are best adapted, then it is time to develop and extend wards, operating theatres, and other special departments. It can never be an economic proposition to add beds to the parent hospital and utilise them for the retention of patients a moment longer than is absolutely necessary. And we are of opinion that this is the true test of whether, in any given locality, extension should be by way of recovery branches or by way of beds at the parent hospital.

WOMEN'S HOLIDAY FUND:

WANTED A NEW HOLIDAY HOME.

To the Editor of The Lancet.

Sir,—We make an earnest appeal to all concerned with the health and welfare of the coming generation to help the Women's Holiday Fund to raise the sum of £1000–£5000, necessary for the purchase and equipment of a house to be used as a holiday home for mothers and babies. The Women's Holiday Fund have recently had to terminate the lease of their home at St. Leonards-on-Sea, and are anxious now to buy a house, so as to start a permanent home for what is an important part of their work. All social workers know only too well how often a tired ailing woman has to drag on uncomplainingly at home, when a fortnight's change with good food and fresh air would restore her to health. They also know how difficult it is to secure vacancies at the homes, where not only can such cases be received at a moderate charge, but where the mother and baby are specially cared for—with such excellent results. Donations may be sent to the Secretary, Home for Mothers and Babies, Women's Holiday Fund, 76, Denison House, 296, Vauxhall Bridge-road, S.W. 1.

We are, Sir, yours faithfully,

Mary FitzAlan.
Jessie P. B. Phipps.
Marion Vaughan.
Helen A. Pownall,
Chairman of Executive Committee.

May 18th, 1925.

A MEMORIAL TO MRS. R. P. WETHERED.

A committee has been formed to raise a sum of money to be expended in placing a tablet to the memory of Mrs. R. P. Wethered in St. James's Church, Paddington, which she attended, the surplus to be used in furtherance of the work to which she devoted her life. When Mrs. Wethered died last year, the cause of rescue and preventive work among young persons lost one of its most enthusiastic supporters. For more than 40 years she had laboured unceasingly to save young girls from drifting into evil ways, to raise and elevate the fallen, and to restore those diseased to health and efficiency of mind and body. Subscriptions, large or small, may be sent to the Treasurer, Mr. E. B. Turner, F.R.C.S., at Victoria House, 117, Victoria-street, S.W. 1.

PROSTITUTION IN INDIA.

During recent years a certain number of educated Indians who have become imbued with Western ideals have expressed themselves as hostile to the practices which tend to popularise the prostitute's profession. In a recent book on "Crime in India" (Humphrey Milford. 1924. Pp. 169. 8*s.* 6*d.*) Mr. S. M. Edwardes, who was a Commissioner of Police in one of the most important urban forces of India, discusses both the historical aspect and the present-day position of prostitution which, although not strictly a criminal offence, is yet closely connected with crime and police work. There exists in the first place a form of prostitution connected with the traditions and customs of certain religious sects and side by side with this ordinary commercial prostitution is notoriously rife. The ordinary type consists of two varieties: that carried on by Indians and that by European prostitutes, usually of Russian and Eastern European origin. There was at one time in India a Contagious Diseases Act, under which the Indian Government exercised a certain amount of supervision over prostitution, but this was repealed so that no official statistics as to the extent of the practice are available. India has been represented at various conferences held under the ægis of the League of Nations with regard to the traffic in women and children and has actually assented to the fixing of the age of consent at 21. Various private Bills on this matter have been presented to the Indian legislature and it remains to be seen how the politicians will deal with the demands of recent Indian opinion for the restriction of purely commercialised vice, while permitting hereditary harlotry and religious prostitution under the Hindu caste system.

Dr. F. W. Pilkington would like to know of a private home or institution where an elderly lady, infirm, but not mentally afflicted, can be boarded and lodged for £4 weekly.

A Clinical Lecture

ON

BLOOD PRESSURE:

ITS RELATION TO THE TREATMENT AND DIAGNOSIS OF VERTIGO AND TINNITUS.

Delivered at University College Hospital Medical School on May 14th, 1925,

BY RICHARD LAKE, F.R.C.S. ENG.,
G. E. DUVEEN LECTURER ON OTOLOGY, UNIVERSITY OF LONDON.

THE effect of the blood pressure upon the symptoms of vertigo or tinnitus and one may here remark that what applies to these two symptoms may be applied even more widely to deafness—is a matter in which I have been much interested for many years, more especially in the first instance in vertigo, as the amount of incapacity caused thereby is so frequent and so severe. In 1912 I compiled a classification of cases of aural vertigo. Amongst these were: Aural vertigo due to altered states of the blood pressure: (*a*) increased blood pressure, and (*b*) diminished blood pressure.[1]

At that time I was under the impression that increased pressure was the commoner condition. Now, however, I am sure that it was partly my ignorance of the proper technique, and partly preconceived opinion that were the causes of my assuming results which now I am convinced were wrong. After a while I got into the habit of always sending my patients, whenever possible, to a skilled observer. The mercury sphygmograph made a great improvement possible in the accuracy of observation—still, I think that the stethoscope should be used in all cases to obtain the best results. At this time we were obsessed as well by a supposed condition called increased intra-labyrinthine pressure, a condition which, without much risk, I think we can say has yet to be proved to exist. The paralysing effect of such, or any, unsupported explanation on research is really serious. And seeing this, I feel that it will be better if my present contribution is received with, to say the least, reservation.

TREATMENT OF VERTIGO AND TINNITUS.

A few words as to the operations I was largely instrumental in introducing for the relief of vertigo and tinnitus. Some of my colleagues generously sent their cases to me thinking that some more uniform result would be obtained if the material were in the hands of one rather than many, and that also more definite indications for operation would result. Altogether, since 1901, I have done 10 operations for vertigo with one death; the result was good and I do not think that a death should ever occur. A good example of the beneficial effects of the operation for vertigo is a patient (reported by me previously as No. 8)[2] who commanded a Territorial regiment in India throughout the war.

Turning to operative treatment for the relief of tinnitus one forms a totally different opinion. In 1909 I stated that in my opinion operations for tinnitus never ought to be done,[3] and that is my opinion to-day, absolutely without qualification.

I think it is more rarely now, with our present knowledge, that it is necessary to operate on vertigo. Relatively, it is also seldom, I am thankful to say, that the adviser is unable to give relief to the sufferer from vertigo, although I regret to say relief is not so frequent with regard to those suffering from tinnitus. Above all, when one has any evidence of neurasthenia, we must be very careful never to suggest operation. A few years ago, my colleague, Mr. Tilley, asked me to see a patient with severe tinnitus. I treated him off and on for some time, but with little effect—he was a confirmed neurasthenic. He implored me to operate, which I refused to do, but then came to me and said he had been to see two other aurists who both wished to operate. I besought him to be advised by me, and to have nothing done, as he not only would derive no benefit, but rather would be worse from the effect of the disappointment. Unfortunately, however, he preferred to attempt to obtain the impossible. Later on he wrote to me, as he had already promised he would do in the event of his submitting to operation, confirming my pessimistic view.

These two symptoms, vertigo and tinnitus, occurring in many diseases besides aural ones, have one great point of difference in the latter. The former, except in suppurative disease of the middle ear, is more often central, while the latter is, at least in earlier periods of life, most frequently due to a peripheral irritation.

Past and Present Methods.

In considering the treatment of these conditions it is well to revert to the methods of 20 years or so ago. This especially applies to tinnitus. When a patient complained of tinnitus, the aurist, who at that time had but little to guide him in the pathology of the condition, was in the habit (presuming others behaved in a more or less similar way to myself) of using four or five drugs, purely empirically. We got good results, or bad results, or no result at all, but never was one able to arrive at any clear indication to assist in giving any *special* treatment in any *specific* case. Now, however, things are certainly improved. We know much more about the origins and causations of these two symptoms. We know more about the pathology, infinitely more about the physiology, and a great deal more about the effect of drugs and treatments.

If we consider vertigo, we notice that, except in suppurative disease, it is uncommon before adult life; that is, in the earlier years—up to 25, we will say—it appears to be almost always the result of middle-ear disease. When it occurs in early adult life and onwards to old age, it appears to be practically invariably the result, either of changes in the arterioles or of the effects in the general circulatory system caused by disease or drugs.

The treatment of vertigo in the relatively young adult requires a very careful study of all possible contributory factors, and here, as well as in later life, a careful estimation of the blood pressure may be of great assistance. Of other contributory factors which may be present, sepsis, tendency to neurasthenia, and any coexisting disease of the ear are the chief. It is only when we are unable to give relief that operation is called for, and even then operation should only be resorted to when deafness is of so high a degree that the ear is useless.

When one comes to study and deal with cases of vertigo occurring in ordinary non-suppurative middle-ear disease, or in cases where there is no obvious middle-ear disease occurring towards the prime of life or later, there are certain conditions which will prevail. One of the most frequent is that there is an abnormal state of the blood pressure. Another one is that not infrequently the patients have a fixed malleus and an obstructed nose, and have been in the habit of using great violence in blowing the nose. In such a case there will be a very lax tympanic membrane. This laxness is rarely found without pre-existing fixation of the malleus, and is caused, as is sometimes vertigo, by violent distension of the middle-ear through the forcible nose-blowing; then merely ceasing from violent nose-blowing will, in many cases of itself, cause the disappearance of the vertigo. Correction of the nasal obstruction is necessary for permanent relief.

THE INTERPRETATION OF BLOOD PRESSURE.

With regard to blood pressure what has to be said will apply equally to tinnitus and to vertigo. We can, for the sake of argument, consider that blood pressures may be divided into three main categories: above the average, the average, and below the average—the average being that termed the normal blood pressure, but the word normal here means the mean or average blood pressure of a large number of people in good health. Therefore, there must be a smaller proportion than the average who have a blood pressure above the average; the same applies to the low pressure, and, I think, it is the generally accepted fact that the lower blood pressures are people who, given the opportunity, live the longer.

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[1] THE LANCET, Dec. 14th, 1912.

[2] Ibid., June 10th 1911.

[3] Brit. Med. Jour., Oct. 16th, 1909.

The relative importance of the height of the blood pressure is probably, as far as I can see, more difficult to ascertain and determine during that period of life in which an early arterio-sclerosis shows itself, and it is there that a correct interpretation of the value of blood pressure shows the skilled physician. I think it is acknowledged that when arterio-sclerosis commences the blood pressure steadily rises, and that this will continue rising to a high grade from the individual's normal, but will, in a proportion of cases, later on begin to drop, and may fall very low.

When we find in an adult that the blood pressure is considerably below normal, and this in a person who suffers from vertigo, it is well to attempt, at the commencement, to raise that blood pressure towards that to what is assumed to be the normal, but it has always seemed to me that from 10 to 12 per cent. is as much as we should endeavour to raise it, for in these people it is probably normal at but little above 120 at the age of 45. Here one finds the most extraordinary effect of tobacco-smoking. If the blood pressure is low after the age of 40, tobacco-smoking appears to me frequently to have the effect of causing vertigo. When this is the case the mere abstention from the drug affords relief from the symptom which lasts as long as that abstention is observed.

One of the chief characteristics of the vertiginous attacks due to subnormal states of the blood pressure is the period in the 24 hours during which many of the attacks have occurred. The patient wakes up giddy, attempts to get up, and is generally obliged to return to bed and there stay for a period of time which may last from a few hours to several days. This condition seems to be generally attributed to bilious attacks, and I do not see quite how we are to separate them, as at any rate, personally, I am quite ignorant of what a bilious attack is. Sweating occurring after the attack I have also noted, but by no means constantly. As for the direction attributed to the movements of particular objects, certainly in a large proportion of cases there is no specific direction observed, but the fact that there is a specific direction does not seem to be of any importance. Of course, one comes upon a certain number of people who think that they are giddy when only experiencing a tendency to faint, and they always will answer in the affirmative when asked if everything goes black when the attack occurs. Actual vomiting, I should say, is uncommon, though nausea, even severe, is generally complained of in vertiginous attacks with low blood pressure.

A high blood pressure is, I think, extremely rare in cases of vertigo, and I am inclined to think that it is on account of the fact that when the intercranial arterial pressure is raised high enough to possibly cause a vertigo, that symptom is missed in the general physical disturbance. Still, vertigo does occur, though very rarely, in association with a high blood pressure. One of the rare instances in which I can recall high blood pressure with vertigo was due to sepsis derived from pyorrhœa. This was the case of an extremely vigorous woman of some 50 years of age, and she was immediately relieved of her vertigo when the oral sepsis was cured. High blood pressure in cases of vertigo is so rare as to be almost negligible. It is only when we find the blood pressure of a person suffering from vertigo is not subnormal, but practically the average, that there is any serious difficulty in arriving at the causation, when we seek the assistance of a skilled physician who can inform the aurist whether arterio-sclerosis is commencing or not, and if the patient, who would in health have had a low pressure is now developing an average blood pressure,—i.e., a raised one for him.

Excessive Reduction of Blood Pressure as a Cause of Vertigo.

I have twice been consulted by people, one of either sex, who had each been under a physician for the purpose of having a too high blood pressure reduced. The physician had in each instance been, from his point of view, successful. What the two medical men thought of my request that they would allow the pressure to go up again I never knew. Both of them were kind enough to accede to my request, to the patients' immediate relief from the vertigo. And there is no doubt that such or similar effects occur as the result of disease.

With regard to the treatment of vertigo, where relief is not obtained either from the cessation of violent nose-blowing, or from the discontinuance of tobacco, there are many drugs which will raise the blood pressure. I did all my early work with the derivations of ergot. There is a form of medication which is at the present time very much before us, I refer to the use of the endocrines, and I am convinced that in the administration of the correct combination of certain of these products the best method of treatment may lie.

TINNITUS AND ITS TREATMENT.

Tinnitus, in contradistinction to vertigo, was, during what I may term the empirical age, perhaps the more successfully treated. It is always well, I think, to confess even in public the error of one's ways, and it was my habit in those days to have five, I think it was, prescriptions, and my tinnitus cases ran the gamut, unless they were fortunate enough to get early relief. Even then I was quite convinced that the best drug, taking it all round, for the treatment of tinnitus was dilute hydrobromic acid, but of the why or wherefore I was ignorant, nor had I any definite reason for giving it in any particular case. We have here two totally different causations. In early life, and occasionally later, peripheral irritation is the direct cause of tinnitus. We may have an acute obstruction of the pharyngeal end of the Eustachian tube, caused by a little inflammatory condition, due to colds, and so forth. It is also occasionally kept up by a more or less chronic stricture of the tube. I have relieved an early tinnitus by injecting into the inner end of the Eustachian tube a very minute quantity of glycerin. acid carbol., not only may the tinnitus be stopped thus, but, if so, it is stopped instantly. Naturally, these intertubal injections are not capable of being handled without experience. Nor must the amount blown into the tube exceed at the outside one minim, and very gently, for it is perfectly extraordinary how much evil may result from what should be a perfectly safe procedure.

Fixation of the Stapes.

Leaving now tinnitus in the young, or tinnitus as a result of inflammatory effects of the nasal pharynx, we come to that variety of tinnitus due to middle-ear disease where there is fixation of the stapes, and in these cases the symptom is particularly difficult to treat. I have seen it due to an adhesion of the tympanic membrane and the stapes head, which was relieved by a division of the tiny adhesion. Tinnitus due to fixation of the stapes and the oval window is the most obstinate and resistant of symptoms, and it is here that empiricism is still paramount; I will not recapitulate the drugs which have been recommended, for you will find them enumerated in every text-book upon the subject. Here I think the value of acid hydrobromic dil. and valerianate of zinc in doses of 5 to 7 gr. (three times daily) should be tried. But when we come to consider the tinnitus rather as the disease and not the symptom, by which I mean the case of a person who consults the aurist for noises in the head, and whose auditory powers are practically unaffected, we obtain a blood-pressure picture the absolute opposite of what is found in vertigo. The blood pressure in tinnitus cases over middle age is much more often *above than below the average, and must be primarily* entirely due to a central nervous disturbance. Here then is the reason why dilute hydrobromic acid is of value in tinnitus. For this drug to act well the blood pressure must be above normal; the acid is given in doses of a drachm three times a day, reduces the blood pressure slowly and steadily, and gives relief in nearly every instance.

When the blood pressure in a case of tinnitus is normal or sub-normal, we can still use the same drug, qualified with other substances capable of slightly raising the blood pressure, such as digitalis and strychnine. That is to say, that if a patient has a low blood pressure, or a normal blood pressure, the hydrobromic acid will not effect any relief of the symptom, because it will still further lower the blood pressure, whereas when the blood pressure is high, the action of the drug alone suffices. Here a judiciously chosen endocrine will be of benefit—probably benefit of greater duration.

Unfortunately for me, and for those whom I have had to treat, endocrines came late on the field, so I cannot boast of very extensive knowledge of their employment.

OPERATIONS FOR THE RELIEF OF TINNITUS.

As I have already stated, my contention is that in future many fewer operations for the relief of tinnitus should be performed. I have myself destroyed the cochlea in five instances with one questionably good result. Other forms of operation have been advocated, and there has been a large proportion of fatalities. There is, practically speaking, not one proven cure.

Everybody who has dealt with tinnitus is aware that subjective noises are described by patients as noises in the ear, or noises in the head, and I think this differentiation is one of very considerable moment; especially is it of moment if the patient says that first they were in the ear, and now they are in the head, *for what happens, no doubt, is this.* A peripheral irritation causes a reflex irritability in the auditory centre, which is demonstrated by tinnitus. As long as the peripheral irritation, or any result of the peripheral irritation, remains, the tinnitus persists. If a catarrhal condition of the Eustachian tube occurs, which starts a tinnitus, that tinnitus will not cease if the catarrhal condition passes up into the middle ear, and causes any greater or lesser sub-inflammatory intratympanic condition, which, in its turn, may cause the formation or contraction of cicatricial bands. Hence, the necessity of early vigorous treatment to check a tinnitus in the early stages.

After tinnitus has been peripheral for a certain length of time, the outside duration of which I would myself place arbitrarily at three years, the subjective sound becomes central by what is termed catalysis; that is to say, a prolonged irritation of the central ganglion cells has caused the ganglion cells themselves to become diseased or disorganised. The tinnitus becomes central. I think that all one can do when this occurs is to try, if possible, by means of one's own will power or by careful medication, to enable the patients to tolerate and ignore as far as possible the annoyance to which they are subjected.

Pulsatory Tinnitus.

This is an interesting form of tinnitus; it is really the perception of the heart sounds as conveyed by the column of blood, and is always due to some form of obstruction to the clear outflow of sound, as opposed to the intake of sound. That is to say, that normally this sound, which is always present, is not perceived by the auditory nerve, because it has so free a power of passing through the tissues. The relief of this symptom, however, is not usually very difficult to obtain by the employment of digitalis, strophanthus, and hydrobromic acid.

The absence of any allusion to the employment of irrigation and rotation in the diagnosis of vertigo is, I am sure, likely to give rise to the belief that I have unintentionally omitted it. Such is not the case. I have nothing novel to add on this matter to the theories in modern text-books upon diseases of the ear. And I have carefully avoided discussing the effects of intracranial lesions and growths as going outside the province of this address.

LATE RICKETS AND OSTEOMALACIA IN DELHI.

AN ANALYSIS OF SEVENTY-THREE CASES.

BY GRACE STAPLETON, M.D., B.S. LOND.,
WOMEN'S MEDICAL SERVICE, INDIA.

THIS series of cases was seen at the Lady Hardinge Hospital, Delhi, during the years 1921–24, chiefly in the medical wards and the out-patient department, but at the same time many similar cases were passing through the obstetric and other wards, where, however, there was not the same opportunity to take full notes. No selection was made of the patients, except to exclude those where there was any doubt in the diagnosis. Late rickets was diagnosed when there was a clear history that the patient had been quite well and free from all deformity of the legs or other bones until at least 8 years old, and marked enlargement of the lower ends of the radius and ulna about the epiphyseal junction was present, while on X ray examination, where it is possible to obtain it, signs of active disease with defective ossification and cupping of the end of the diaphysis were shown. The accompanying photographs (Figs. 1 and 2) of B., aged 12, and H., aged 17, show the clinical condition, and the X ray print (Fig. 3) of N. the radiographic appearances. It was only possible to examine a certain number of the patients by X rays, as there was no apparatus working in the hospital and they had to be sent for examination to a male doctor in the town, to which arrangement some of these purdah women objected.

Grouping of Cases.

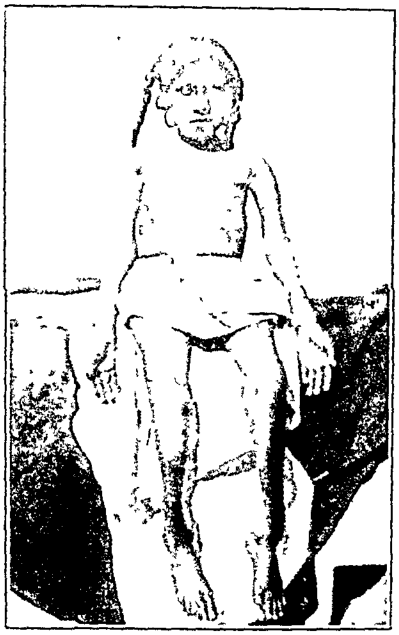
Osteomalacia was diagnosed when there were symptoms of pain in the lumbo-sacral region of the spine and thighs, often spreading to other parts of the body, difficulty in rising and walking, with the typical cautious, waddling gait, accompanied by tenderness in the bones.

Very soon after commencing the investigation one came to realise that they formed a fairly complete series, leading gradually from the typical late rickets case in young girls of 10, 12, and 14, through an intermediate stage in rather older patients in which the X ray signs of bony rickets were still present, but were accompanied by the deep-seated pains in the bones that are usually associated with osteomalacia, and then on to the well-developed forms of the latter disease that up to now has been thought to be mainly connected with pregnancy and lactation in young married women. The series, however, did not end here, but included women of 30 and 35, who were getting near to what in India is considered the later part of the child-bearing age, and terminated in two cases who had definitely passed the menopause, the elder of whom must have been at least 60, as she had been born a few years after the Mutiny.

Of the total cases 20 could be definitely diagnosed clinically as late rickets, as all showed enlarged wrist epiphyses, except a girl of 20 whose lesions had healed, together with some degree of beading of the ribs, though in nearly half it was only slight. Genu valgum or varum was present in 13 of the series. The wrist or the knee epiphyses of nearly half the cases were examined by X rays and the diagnosis confirmed. The age of these girls was from 10 to 20 years, and 16 of them were between 12 and 17.

Of the two who gave their age as 20, one, as stated above, showed the disease well past the active stage, but great deformities had been left, and the other was a case that dated back from early childhood with recrudescence at puberty and again following each pregnancy. On the whole the pain in these cases was not at all severe. They complained but little unless carefully questioned, and they had been brought for treatment owing to the difficulty in walking from the deformities more than for the actual pain.

FIG. 1.



B., aged 12, Mussulman. Late rickets of four years' duration. X ray examination showed multiple spontaneous fractures of the right forearm.

The next group of cases numbered six and consisted of girls of 16 to 20 in whom the symptoms were more like those of osteomalacia—i.e., more marked bone pains in the lumbo-sacral region of the spine, the hips, spreading all down the legs, and also felt in the ribs, and to a less extent in the arms. The pain was by no means restricted to the ends of the bones. Accompanying it there was muscular weakness and a very real difficulty in walking. Genu varum or valgum was present in half the cases, beading of the ribs in four, and enlargement of the wrist epiphyses in three. In those patients of whom it was possible to get an X ray plate, changes in the ends of the long bones were found similar to those in the preceding group. The cases of true clinical osteomalacia into which the previous group gradually merged numbered 17, and the age-limit was again higher. Most of the patients were in the early twenties, only nine being 16 to 20 and six were 30 or over. The symptoms showed little variation between case and case and were typical of the disease. In certain of the younger patients signs suggestive of late rickets were still present. Five had prominent wrists, and these were all under 20, two of the same age showed very definite beading of the ribs, and in nine others the costochondral junctions were abnormally easily felt, these patients being from 17 to 22 years old. Eight showed bowed legs. The youngest patient might have been included in the previous group except that her history and symptoms were typical of osteomalacia. X ray examination of her enlarged wrists showed a condition which could not be distinguished from late rickets.

Place of Origin of the Disease.

The results of grouping the patients according to the districts from which they came were as follows:—

Delhi.—Lived from birth ..	21	Ghaziabad and neighbourhood	4
Village life in childhood	23	Rohtak and neighbourhood	2
And Simla, half the year in each ..	2	Meerut district	2
And Agra	1	Bulandshahr district ..	2
Neighbourhood ..	2	Secunderabad district ..	2

Also one each from the districts of Saharanpur, Bareilly, Muzaffarnagar, Aligarh, Shahdara, Barot, and Hardwar. In two no note had been made where the disease began.

From this it can be seen that the disease is very prevalent among girls who are used to unrestricted village life in childhood, and then, generally soon after marriage, are brought into the crowded quarters of the town. On the other hand, village life does not exclude the possibility of late rickets or osteomalacia developing if certain other conditions are present, as shown below.

Caste of Patients.

The patients were of the following religions:—

Hindu..	55	Indian Christian ..	2
Mohammedan ..	15	Out-caste (sweeper) ..	1

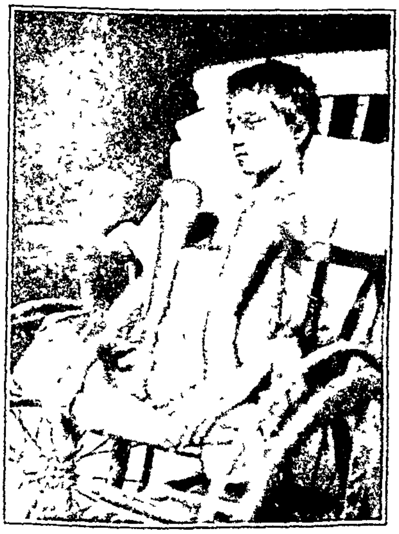
The Hindus were further divided into castes as shown below:—

Banya	31	Thakur	2
Kahar	5	Kayasht	2
Brahmin	3	Sais	2
Jaini	2		

Also one each of Kathri, Sonar, Bhisti, Khyat, and caste unknown.

From this it may be seen that the great predominance in Delhi among the Banya women, and of these especially the Agarwala Banyas are affected. Many of these are well to do. Among the Mohammedans, on the other hand, the disease occurs more among the poor, as only three of the 15 cases could be described as moderately well off, and at least four of the remainder said that they were in extremely poor circumstances.

FIG. 2.



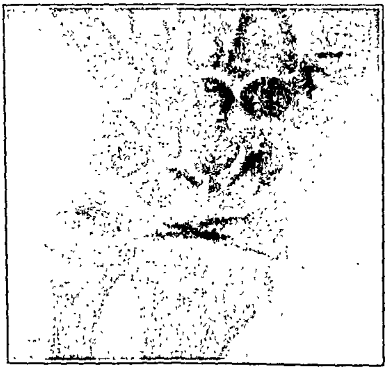
H., aged 17, Brahmin. Late rickets of eight years' duration. Unable to walk for one year. Spontaneous fracture of each ulna.

Diet.

Of the total patients 51 were strict vegetarians, and their diet consisted of chapattie—i.e., bread in the form of pancakes made of coarse wheaten flour and water, with dal (pulse) and vegetables. Those in moderately good circumstances took milk and fruit too, and the richer the patient the more ghi (clarified butter) would she use in the cooking of her food. The really well-to-do also had sweets made of sugar, curd, ghi, nuts, and flour. The ghi used is subjected to considerable heat in its preparation.

The non-vegetarian diet of the poorer patients was very like that of the vegetarian patient of similar standing, except for the occasional addition of meat, generally goat, perhaps once a week. The better class ones took meat often twice a day. The cases were grouped as follows:—

FIG. 3.



Radiogram of wrist of N., aged 16, Mussulman, showing the characteristic rickety changes at the end of the diaphysis of the radius and ulna. Symptoms of six months' duration only.

—	Diet.				Total.
	Good.	Medium.	Poor.	Very poor.	
Vegetarian ..	18	25	8	—	51
Non-vegetarian	2	5	9	6	22

From this it can be concluded that the better vegetarian diet containing animal fat in considerable quantity is not sufficient in itself to prevent the disease from developing.

Home Conditions.

Some attempt was made to estimate the home conditions as regards sunlight, airiness, and overcrowding, but one soon realised that this could not be done with any precision without seeing the actual buildings. In a tropical country a poor person is often better off as regards fresh air than a well-to-do one, as the rough hut made of unbaked bricks and mud is only one-storied and the sunlight may easily enter the courtyard, even in the town. The better-class Hindu house in Delhi, on the other hand, is generally built with the purpose of excluding sunlight and providing privacy. It is two or three stories high and the rooms all open into the central courtyard. There are as few windows as possible in the outside walls. If the house is high, the women who live on the ground floor may have very little, if any, direct sunlight, the rooms are often dark, and the air may be fairly stagnant. The houses of the better class Mohammedans, on the other hand, are often built in a different style, and the rooms are more open and airy, and there is more courtyard space. This may partly account for the different incidence of the disease among the two communities. The poor Mohammedan, who keeps strict purdah, lives often in the worst hygienic surroundings of all, as even her courtyard, if the house possesses one, may be too public to use. As regards overcrowding, one found that the circumstances of the family did not by any means correspond to the accommodation available. For instance, one woman, whose husband was a clerk drawing good wages, stated that her family consisting of eight persons lived in two small rooms, and there was only a tiny verandah and kitchen besides, and another quite well-to-do patient from the same town shared a single room with three other persons. One of the poorer Mohammedan women, who spent her time weaving and spinning, described her home thus: "Small, one-roomed. No windows. Verandah small. No sun ever enters. Used by three adults and one child." She lived there day and night and only slept on the verandah in the summer.

Several of the other women said they had lived under very similar conditions. Another patient's history was difficult to understand at first, as she stated that she came from a village and had to take a certain amount of exercise to fetch her water every day, and they were not particularly poor; but two years later one had an opportunity of visiting the house and seeing the appallingly dark room which she had not left for months, and where she had spent the greater part of each day before the disease had entirely crippled her. As other cases might be as misleading as this one, it would be useless to do more towards classifying them according to their home conditions.

Relation to the Purdah Life.

Every patient was carefully questioned about her home life and customs in connexion with the observance of purdah, and the following striking results were compiled from their answers:—

	Cases.	
Strict purdah always observed	11	
" " not acknowledged, but contrary to custom to go out	8	
Never allowed out much in childhood and strict since marriage	13	
Allowed to play out of doors as a child, but kept in after marriage	15	
Unrestricted childhood, but after marriage allowed out very little	12	
Used to factory work, but discontinued some months before onset of illness and became purdah	2	
Not strict purdah, but prevented by illness from going out for many months before symptoms started	2	= 63
Not purdah, and used to a little out-door exercise	6	
Used to regular exercise	4	

In 86 per cent. of the cases, therefore, the disease was closely associated with purdah life.

Further inquiries were made into the last four cases. One was a beggar child of 10, whose history was not very reliable, and she had no relations to confirm her statements. Another was a girl of 16 of a well-to-do Banya family, who had begun to suffer from pains about her knees and wrists at the age of 10 or 11, but she continued to attend a day school in Delhi for the next two years until the increasing pain and difficulty in walking were severe enough to keep her at home. The third case was a Mohammedan of 22, whose family were too poor to observe purdah. She used to take a daily walk to visit a relative, who lived near some public gardens not far away, and she also went shopping in the bazaar, as long as her disease was not too advanced. As she lived in one small sunless room, she used also to go and sit in the sunlight in the lane outside.

The last patient was one who had certainly taken abundant exercise daily for many years. It was the only case of osteomalacia seen in a sweeper. She was married and went to live at her husband's house when only 7, and as they were poor began her work, that of removing refuse from Indian houses, at an early age. She worked for long hours, often amidst bad surroundings, and only gave up her daily work because of the disease, which started in connexion with her third pregnancy at the age of about 22.

Age of Onset of Symptoms.

The following figures were obtained :—

Age.	Late rickets.	Osteo. and int.†	Age.	Late rickets.	Osteo. and int.†	Age.	Late rickets.	Osteo. and int.†
8–10	5	—	16	—	9	25	—	2
10	—	1	17	—	4	27	—	2
11	1	1	18	—	5	29	—	1
12	1	—	19	—	6	30	—	1
13	6	2	20	—	4	44	—	1
14	1	5	21	—	3	60	—	1
E.C.R.14*	1	—	22	—	1			
15	5	3	23	—	1	Total	20	53

* E.C.R.14 = Early childhood and recrudescence at 14.
† Osteo. and int. = Osteomalacia and intermediate cases.

Both diseases are therefore associated with the years of rapid growth of the body in the majority of cases. The last two cases were interesting in that they were typical in spite of their age. The old woman of over 60 had given birth to ten full-term children in her early married life with no difficulty, and had always had good health until she went on the pilgrimage to Mecca three years before. There she fell off her camel and injured her head, and was unable to walk for four or five months owing to pains in her limbs and back. Then she made a good recovery, returned to India, and kept well for two years, after which the osteomalacia symptoms gradually set in. On examination one found a triradiate pelvis of such a shape that it would be impossible for a full time child to pass. As she had spent all her money on the pilgrimage, she had lived in a very poor way in one dark, damp, ground-floor room ever since. The other woman had been used to taking a considerable amount of exercise in her younger days, as she frequently went to bathe in the river outside the city, but this had been gradually discontinued owing to increasing ill-health during the last eight years, and since a third attack of pneumonia the year before the disease had come on. She was a very severe case, completely bed-ridden, with much deformity of the chest, and tenderness in all the bones.

Relation to Menstruation, Pregnancy, and Lactation.

The onset was next considered in its relation to menstruation, with the following results :—

Before puberty	16
Relation to puberty not noted but occurred at ages 12–15	5
With or after puberty	50
After the menopause	2
Total	73

The disease therefore can occur both before and after the time during which the ovaries are functioning actively. The old method of treatment by removal of these organs could not on this account be always justified. The onset was then investigated in regard to its connexion with pregnancy, and the following facts were found :—

Onset—	Cases.
Before first pregnancy in	30
During ,, ,, ,, ...	14
,, successive pregnancy in	10
After delivery, in at least two of which patient was not lactating	4
During lactation..	12
After weaning 3 year old child	1
Many years after last pregnancy	2

Among the 30 cases which developed the illness before any pregnancy had occurred all the 20 patients who had been included in the subdivision of late rickets on clinical grounds were found to be included, but apart from them there were the ten other cases. Osteomalacia in India is not only a disease connected with pregnancy. Neither is it one that occurs as the result of exhaustion from numerous conceptions, as the 14 cases occurring in the first pregnancy show when compared with the ten arising during the later pregnancies. Of these ten, three each occurred with the second and third pregnancies respectively, and only one with the fourth, two with the fifth, and one with the sixth.

Investigation made to determine as far as possible the time in the pregnancy when the symptoms commenced gave the following results :—

During 1st month ..	nil	During 7th month	4
,, 2nd ,, ..	,,	,, 8th ,, ...	1
,, 3rd ,, ..	2	,, last half of pregnancy	1
,, 4th ,, ..	4	Not noted	4
,, 5th ,, ..	4		
,, 6th ,, ..	4	Total	24

Of the 12 patients whose symptoms came on during lactation eight stated that they began to feel the pains within the first three months, and in a similar number it was the first child that they were nursing. It would again be difficult therefore to explain these cases on the grounds of physical exhaustion.

Onset in Relation to other Diseases or Injury.

In the majority of cases the disease was found to have come on insidiously with increasing bone pains and difficulty in locomotion, but ten patients gave a definite history of fever of various sorts having proceeded the osteomalacia symptoms, and in six others the symptoms followed an injury. Five patients stated that the disease had become much worse since an attack of fever.

Special Symptoms and Signs.

The history in most of the cases, especially the older patients, was very similar—i.e., deep-seated pains in the hips and lumbo-sacral region—spreading later to the ribs and sometimes widely over the body, always worse on movement, steadily increasing difficulty in rising and walking, often weakness and trembling in the legs, and in the end the patient becoming entirely bedridden, sometimes unable even to lift a water pot to give herself drink. Two special symptoms, however, were striking becau of their frequency, one the occurrence of tetany, an the other that of spontaneous fractures. In no le than 30 out of 63 cases in which a record was mad a history was given of definite tetany or attacks cramps in the hands and sometimes the feet too.

Out of 20 cases in which it was possible to obtai an X ray photograph of the forearms or knees, sig of spontaneous fracture were found in 14. In man cases the patient was unaware that these had occurre and had continued using their limbs so long as the was no accident to cause displacement of the fra ments. One or two, however, were able to point a small, slightly tender mass of callus along th posterior border of the ulna or elsewhere, and tw were brought to hospital with malunited fractur of the lower end of the femur. One patient sustaine a spontaneous fracture of the mandible while unde treatment. Pelvic deformities, often of a very seve type, were found in a large number of cases, but th younger patients were not all submitted to systemat internal examination. Bending of the clavicles w noted in a few cases, and two adult patients show very marked deformities of the thorax similar those met with in infantile rickets.

Family History of the Disease.

In 20 out of 56 cases in which a note was mad the history was obtained of a similar disease havin occurred among relations or neighbours. Seve patients had had a sister with similar symptoms, an the mother of another was said to have become ver bent since the birth of this girl. Four related th another woman of a different family but living in th same house was affected.

Conclusions.

1. There is no sharp dividing line clinically betwe late rickets and osteomalacia cases, but intermedia cases are found showing characteristics of bot The difference in symptoms appears to be due conditions of the tissues depending on the age of th patient.

2. The determining cause in the majority of cases is the lack of sunlight and exercise associated with the purdah life in North India.

3. The disease usually commences about puberty or in early adult life, but cases do occur occasionally in older women even past the menopause.

4. Osteomalacia is not uncommon in young women apart from pregnancy.

5. Tetany frequently occurs in the course of osteomalacia, and this suggests some close relationship between the metabolic disturbances that give rise to the two sets of symptoms.

These conclusions are in close agreement with those found in a previous paper[1] in which only the early cases of the series were used combined with others from Nasik.

The above investigation was carried out at the suggestion of the late Dr. H. S. Hutchison, of Glasgow.

COLLOIDAL KAOLIN.

I.

SOME PROPERTIES OF COLLOIDAL KAOLIN.

BY SIR WM. J. POPE, K.B.E., F.R.S.,
AND
R. T. M. HAINES, M.A.

ALTHOUGH china clay, or kaolin, is not acted upon chemically by physiological fluids, it is often used medicinally for internal administration. The ordinary kaolin of commerce is a powder of no extraordinary degree of fineness, but, since its medicinal applications depend upon an absorptive power which would be expected to increase with increased subdivision of the particles, it seems desirable that only the most finely divided kaolin should be used medicinally.

During the last few years methods have been devised for the separation of the larger or more gritty particles from kaolin and for the manufacture of a product consisting only of the more minute particles; the kaolin thus obtained is so finely divided that it shows colloidal properties when suspended in water. In view of the medicinal applications of this so-called colloidal kaolin it seems desirable to record its behaviour towards a number of reagents. The results now described were obtained with colloidal kaolin supplied by British Colloids, Ltd.; the material contained no agar and was the same as that used by Prof. Eyre. (See following note.)

A suspension of 1 g. of the colloidal kaolin in 100 c.cm. of water showed very numerous particles in vigorous Brownian movement on ultra-microscopic examination; for counting purposes a suspension containing 1 g. in 100 litres of water was used. The volume in which the count was made was—

$$27\mu \times 54\mu \times 1{\cdot}3\mu = 1{\cdot}9 \times 10^{-9} \text{ c.cm.};$$

this volume was found to contain 1·83 particles as the average of 52 counts. The suspension therefore contained $0{\cdot}94 \times 10^{9}$ particles per c.cm.; since 1 c.cm. contains 1×10^{-5} g. of kaolin, the average mass of the kaolin particles is $1{\cdot}1 \times 10^{-14}$ g., and 1 g. of the kaolin contains $0{\cdot}9 \times 10^{14}$ particles. These data concerning the size of the kaolin particles are, of course, not very accurate, but they show the order of the dimensions involved.

When shaken with water the kaolin remains in suspension for more than a week. The addition of 0·3 per cent. by volume of strong hydrochloric acid to the 1 per cent. suspension causes immediate flocculation, and the addition of 1·3 per cent. by weight of dissolved sodium chloride brings about complete precipitation within ten minutes. The colloidal suspension is not flocculated by the addition of moderate amounts of sodium hydroxide.

Kaolin a Negative Colloid.

The addition of the solid colloidal kaolin to negative colloidal solutions, such as those of arsenic trisulphide, antimony trisulphide, and the sensitive red colloidal gold, causes no change. When the kaolin is added to solutions of positive colloids, flocculation takes place immediately; thus, on adding the kaolin to colloidal ferric hydroxide solutions made (*a*) by dialysis of ferric chloride solution, (*b*) by steaming ferric formate solutions, or (*c*) by heating and dialysing ferric formate solution, the kaolin settles out, carrying with it the ferric hydroxide and leaving the supernatant liquor clear and colourless. These three colloidal ferric hydroxide solutions are the positive ones, A, B, and C previously described.[2] The flocculating effect upon these solutions shows the kaolin to be a negative colloid. Using a dialysed ferric chloride solution containing one part of iron in 2000 of solution, the smallest amount of colloidal kaolin which brought down all the ferric hydroxide was found to be 4·5 per cent. by weight of the solution itself; the original colloidal ferric hydroxide solution is acid to the extent of 0·0028 normal and the negative charge on the colloidal kaolin can be calculated in terms of caustic soda. The above results show that the kaolin corresponds to 0·25 per cent. of its weight of sodium hydroxide.

The adsorption of iodine from its aqueous solutions containing potassium iodide was also studied. On shaking a solution containing 1·45 g. of free iodine per litre with one-tenth its weight of kaolin and allowing to settle, 5 per cent. of the iodine is carried down by the kaolin; the concentration of iodine in the kaolin is thus about one-half of that in the supernatant solution.

Reaction with Dye-stuffs.

Basic dye-stuffs are removed from aqueous solutions by addition of colloidal kaolin. A stock solution containing 0·2 per cent. of night blue with a trace of hydrochloric acid was shaken up with the kaolin and allowed to stand, when deposition was complete in 12 hours; the addition of 5 per cent. by weight of kaolin removed 47 per cent. of the dye from the solution, and 10 per cent. of kaolin carried down 81 per cent. It will be noted that the concentration of the dye in the separating kaolin is many times greater than that in the residual solution.

Acid dye-stuffs are not adsorbed from aqueous solution by colloidal kaolin. Thus, kaolin does not settle from a 0·2 per cent. solution of erythrosine containing a trace of sodium hydroxide until an electrolyte, such as a minute quantity of solid calcium chloride, is added; the precipitated kaolin is quite white and tintometer comparisons show that no dye-stuff has been removed from the solution.

Amphoteric dye-stuffs behave differently towards colloidal kaolin in acid and alkaline solutions. Thus, a 0·01 per cent. solution of methyl-orange was divided into two parts, the one (*a*) being rendered faintly acid with hydrochloric acid, and the other (*b*) just made alkaline by addition of sodium hydroxide; 100 c.cm. of each was shaken up with 5 g. of colloidal kaolin. Solution (*a*) settled rapidly and the kaolin carried down with itself 68 per cent. of the dye-stuff originally present in the solution; it is noteworthy that the separated kaolin was coloured yellow or buff and not pink. Solution (*b*) did not settle until calcium chloride was added and the separated kaolin was quite white; no dyestuff being adsorbed.

It has now been shown that positive colloids are completely flocculated by colloidal kaolin whilst basic dye-stuffs are not completely removed from solution by the kaolin, but become distributed between the solution and the kaolin in proportions which can be determined.

This distinction is interesting in view of the results obtained by R. R. Walker in connexion with the action of kaolin on the cholera vibrio and on the toxin prepared from the bacilli; although it would appear that this worker used ordinary china clay which was not specially freed from the coarser particles his samples doubtless contained a large proportion of colloidal kaolin. Walker found that kaolin did not remove the vibrios from the suspension. although many were doubtless entangled in the depositing powder; he found, however, that the cholera toxin is entirely removed by the kaolin. The toxin, in fact, behaves just like the positive colloids referred to above and not like a basic dye-stuff; it therefore seems indicated that the toxin is a positive colloid.

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[1] Hutchison and Stapleton: British Journal of Children's Diseases, vol. i., pp. 18 and 96.

[2] Brit. Med. Jour., Feb. 9th, 1924.

II.

THE ABSORPTION OF TOXIN BY KAOLIN.

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IN 1921 Walker undertook some experimental observations (to which Sir William Pope refers in the preceding note) upon the absorptive properties of kaolin, the results of which explained in part its value when administered to cases of Asiatic cholera by Kulme at Nish, and Braafladt and himself in China.[1]

This work, together with the gradually accumulating mass of clinical evidence, has been followed by the exhibition of kaolin in cases of acute and chronic colitis in temperate zones; it has also stimulated manufacturers to prepare "medicinal kaolin" in a really fine state of division, and better still—in the colloidal form, and in some quarters, prompted no doubt by an appreciation of the action of agar when introduced into the atonic alimentary tract—to endeavour to enhance its value by the addition of agar-agar. When considering such a combination, however, one is struck by the possibility that the addition of agar—itself absorbent, though inferior to kaolin in this respect—might hinder rather than help the action of the kaolin. This possibility is strengthened by the results of a few experiments planned to demonstrate any possible difference in the absorbent power of colloidal kaolin (K) and colloidal kaolin plus agar (KA), both of which were supplied for this purpose from the Crookes's Laboratories.

A. *Absorption of Diphtheria Toxin.*

A quantity of a commercial diphtheria toxin was obtained and its lethal unit approximately determined by the administration of varying quantities to a number of young adult guinea-pigs of a uniform weight of 250 g.

Series I.

0·1 c.cm. = } Death (in 15 hours).
0·0025 ,, = }
0·0016 ,, = ,, (,, 18 ,,).
0·0013 ,, = Unaffected.

The result thus obtained was controlled by a second series of determinations.

Series II.

0·005 c.cm. = } Death (in 23 hours).
0·0025 ,, = }
0·002 ,, = } ,, (in 40 hours).
0·0016 ,, = }
0·0013 ,, = Unaffected.

On the basis of these observations each cubic centimetre of the toxin was assumed to contain at least 600 lethal doses.

Kaolin-agar to the extent of 10 per cent. was now added to a portion of the diphtheria toxin and the mixture shaken vigorously for some minutes, then filtered through Swedish filter paper and the filtrate employed in the injection of a further series of standard guinea-pigs, thus:—

Series III.

0·2 c.cm. = 120 m.l.d. } Death (in 15 hours).
0·1 ,, = 60 ,, }
0·01 ,, = 6 ,, ,, (,, 24 ,,).

Kaolin to the extent of 10 per cent. was now added to another portion of the diphtheria toxin and the mixture similarly treated, with the following results:—

Series IV.

0·2 c.cm. = 120 m.l.d. } Death (in 15 hours).
0·1 ,, = 60 ,, }
0·01 ,, = 6 ,, ,, (,, 18 ,,).

Under the conditions of these experiments no obvious difference between the kaolin plus agar and the kaolin could be demonstrated, as each preparation failed to adsorb any appreciable amount of toxin—indeed, if any adsorption took place, it was to a very slight extent, since the reduction in toxicity (if any) was less than the equivalent of six minimal lethal doses.

The experiment was then varied in the following manner: Diphtheria toxin was filtered through a layer of kaolin plus agar about 1 cm. in thickness. This was prepared by making a thick paste of kaolin plus agar with sterile water, smearing it on a perforated disc which was placed on a sterile funnel fitted to a filter flask, which was then thoroughly exhausted to remove excess of moisture from the kaolin bed.

Series V.

2·0 c.cm. = Death (in 21 hours).
1·0 ,, = ,, (,, 20 ,,).
0·1 ,, = ,, (,, 10 ,,).

Diphtheria toxin similarly filtered through a layer of kaolin gave the following results:—

Series VI.

2·0 c.cm. = Death (in 30 hours).
1·0 ,, = ,, (,, 120 ,,).
0·1 ,, = Unaffected.

These two groups of inoculations bring into evidence striking difference in the adsorptive action of the two preparations. Kaolin plus agar possesses very slight action and is unable to reduce the toxicity even to the extent of six minimal lethal doses, whilst the native kaolin apparently adsorbs about 5 m. lethal doses.

The above experiments illustrate the action of kaolin preparations upon one type of bacterial poison—viz., the extracellular or soluble toxin. The majority of the pathogenic bacteria concerned in intestinal infections resulting in toxæmia depend, however, for their toxic properties on metabolic products stored within the protoplasm of the organisms and only liberated when the bacterial cell undergoes disintegration. To study the action of kaolin on this type of poison a member of the typhoid-dysentery group was selected.

B. *Action on Toxin of B. dysenteriæ.*

B. dysenteriæ (Shiga) when grown in peptone broth for some 48 hours at 37° C. and then killed by heating to 60° C. for one hour yields a fluid which, if injected intravenously into rabbits, causes a fatal toxæmia. In animals killed by this method death is preceded by diarrhœa, and the subsequent post-mortem examination shows: (1) A considerable quantity or excess of peritoneal fluid; (2) distension of intestinal blood-vessels and hæmorrhages; (3) considerable injection of the mesentery and omentum; (4) enlargement of the mesenteric glands; and (5) fluid blood in the heart.

Rabbits vary slightly in their susceptibility to Shiga's bacillus; therefore the toxicity of a killed culture of this organism, prepared as above indicated, was tested on two series of 1200 to 1500 g. rabbits.

Series VII.

Rabbit, 1·0 c.cm. = Death (in 18 hours) } Typical P.M.
2·0 ,, = ,, (,, 8 days) }
1·0 ,, = ,, (,, 7 ,,) }
0·1 ,, = Unaffected.

Series VIII.

Rabbit, 5·0 c.cm. = Death (in 24 hours) } Typical P.M.
2·0 ,, = } ,, (,, 3 days) }
1·0 ,, = } }
0·1 ,, = ,, (,, 12 ,,) }

The inference to be drawn from the results of Series VII. and VIII. is that the toxicity of the killed culture in terms of minimal lethal doses is approximately two per cubic centimetre.

One portion of the killed culture of *B. dysenteriæ* was next filtered through a layer of kaolin plus agar, exactly as was done in the case of the diphtheria toxin. Next the filtrate was concentrated to one-third its bulk by evaporation at 37° C., when theoretically, 1 c.cm. should have contained five or six minimal lethal doses. This concentrated filtrate was used to inject 1500 g. rabbits as follows:—

Series IX.

10·0 c.cm. = 50 m.l.d. Death (in 19 hours).
5·0 ,, = 25 ,, Unaffected.

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[1] THE LANCET, 1921, ii., 273.

Another portion of the killed culture was filtered through a similar layer of kaolin and then concentrated to one-third its bulk in the same manner. The injection of this concentrated filtrate produced the *following results*:—

Series X.

10·0 c.cm. = 50 m.l.d. Death (in 24 hours).
5·0 „ = 25 „ Unaffected.

In these experiments no very obvious difference between the pure kaolin and that admixed with agar can be shown, for the difference in the time (five hours) that elapsed between inoculation and death in the two rabbits receiving approximately 50 m.l.d. is too small for consideration.

LOCAL INSULIN REACTIONS.

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BESIDES its general action on blood-sugar and carbohydrate metabolism, insulin causes definite local effects and reactions at the site of injection. These reactions vary with the individual, the site of injection, and the brand and batch of insulin used. The variations are not generally recognised and have been the cause of much worry to patients and to physicians who have had, perhaps, only a few insulin cases to treat. They have been the cause also of many complaints to the manufacturers about their insulin, and in some cases have led doctors to abandon the treatment, even where it seemed essential. It may accordingly be useful to summarise the most common reactions and to point out the circumstances in which they are most likely to occur and the way in which they may be minimised. A few detailed examples will be given of the effects of changes of insulin in a few specially sensitive individuals.

Immediate and Delayed Local Reactions.

The local reactions may be conveniently divided into *immediate* and *delayed*. In all cases it is the hypodermic injection of insulin that is described and not the intradermic or intramuscular. Injections into the skin itself meet with great resistance, cause an obvious pigskin appearance, and much local irritation, swelling, and pain. They should always be avoided and should be suspected as the cause of the trouble when patients who are beginning to administer their own insulin complain of much difficulty and pain. Intramuscular injection gives rise to no obvious swelling but to a deep-seated pain which lasts from 12 to 36 hours. The following local reactions are those which may occur when a hypodermic injection is skilfully carried out. All my patients keep their syringes in methylated spirit or absolute alcohol in a glass test-tube or metal case, and never sterilise them by boiling or strong antiseptics. In this way trouble is minimised, and not a single abscess or infection of any kind has occurred in patients of all classes and conditions. I have only one or two patients who do not administer their own insulin. These observations have been made with the British insulin of Messrs. Allen and Hanburys (A.B.) and of Burroughs and Wellcome (B. W.) and American Lilly insulin, and to a less extent with Messrs. Boot's insulin.

The *immediate local effect* of an injection of insulin is *stinging* at the site of injection. This is most marked during the first few days of treatment and is rarely troublesome after ten days. It is due to the slight acidity of the insulin solution and, if the patient finds the stinging very irksome, it can be largely removed by neutralising the acidity by sodium bicarb. as suggested by Dr. G. R. Stilwell.[1] I have never had occasion to use it. The tissues seem to acquire a local tolerance to insulin and stinging is likely to recur when the injections are changed to a new part of the body. They also recur quite frequently when a change is made to a different make or even a different batch of the same insulin. This often makes patients conclude that a particular batch of insulin does not suit them, while if they persisted with it the increased stinging usually disappears after one or two injections. *Local urticarial wheals* occasionally appear immediately on injection and often when the injection is partly intradermic. As might be expected, these occur most frequently in individuals sensitive to proteins. In certain cases it seems to be a slight anaphylactic reaction which occurs when a return is made to a brand of insulin which has not been used for some time.

Delayed local reactions are much more troublesome. They closely resemble vaccine reactions, and like the latter are more liable to occur in the obese. Thus they occur more frequently in women than in men. I have never seen them in a really emaciated case. They have occurred in about 30 per cent. of my cases. In such cases during the first day or two of the injections only the usual stinging results. About the third to the fifth day hot brawny swellings begin to appear at the site of injection, develop fully in 6 to 12 hours, and have usually disappeared again in 24 to 36 hours. They may cause much pain and irritation, and can be partly alleviated by cooling lotions. I have seen general pyrexia of 100° F. develop for a few days in one severe case. Usually these reactions begin to grow less after seven to ten days and disappear altogether after two or three weeks. Occasionally they persist much longer, but I have never seen them cause serious trouble for more than three months. Sometimes a change from one make of insulin to another makes them reappear for a week or two. Some patients seem to be much more liable to these delayed reactions if the injections are given in the arms instead of the abdomen and thighs. This type of reaction is probably due to the protein content of the insulin and great variations might be expected depending on the sensitivity of the individual. But I can offer no explanation of why they should occur in one part of the body and not in another.

Anaphylactic Reactions.

General anaphylactic reactions have been reported in a few cases by Wilder and Boothby[2] and by Williams[3] in America. So far they do not seem to have been recorded in this country. These reactions were characterised by the typical symptoms of urticaria, vomiting, collapse, &c., and occurred almost immediately after the injections. Wilder's cases were reported in the early days of insulin when it contained far more protein than it does now. And Williams's case suffered from anaphylaxis only when insulin made from pig pancreas was used (Lilly insulin), and not from beef pancreas. Many more individuals are sensitive to pig than to beef protein, and the probable reason why anaphylaxis has not been observed in this country is that British insulin is made only from beef pancreas. I have found local urticarial reactions more liable to occur with Lilly than with British insulin.

Prevention of Subcutaneous Thickening.

Subcutaneous thickenings and great toughness of the skin ensue when injections are continued too long in any one part of the body. These should be prevented by changing the site of the injection from one arm or thigh to another or to the chest or abdomen every week or ten days. Some patients are apt to use one limited part of the body too long because it is very accessible and convenient. On the other hand, I do not think it is best to change the site of injection from the leg to the arm, &c., at every injection, because in this way local tolerance to the sting of the insulin is never fully developed. But, of course, no two punctures should be made at exactly the same spot within 24 to 48 hours.

It must not be thought that many cases have much local trouble with their injections. The majority administer their own insulin with perfect equanimity.

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* Aided by a grant from the Medical Research Council.

[1] Brit. Med. Jour., Sept. 13th, 1924.

[2] Wilder, Boothby, &c.: Jour. Metab. Research, 1922, ii., 701.

[3] Williams: Ibid., 1922, ii., 729.

after the first fortnight and declare they feel no pain or discomfort. Occasionally, for no apparent reason, one injection causes more stinging, swelling, urticaria, or itching than usual. But usually it is found that there has been a change of the batch or brand of insulin which the patient had not noticed before being questioned. It may be useful to record briefly the typical vicissitudes of local reactions that have occurred in some of my closely observed pedigree patients.

Illustrative Cases.

A young male adult commenced Lilly insulin in May, 1923, with doses of 15 to 20 units. He experienced much local stinging and some swelling and delayed reactions for the first ten days, but these soon wore off. A month later he began to administer his own insulin in his thigh and the stinging and swelling recurred for a few days. He commenced British insulin (A.B.) in August and experienced no change in local reactions, although at that time Lilly insulin was stronger than British and he had to use much more of the latter. During September he used Lilly and A.B. insulin and noticed no difference in the local reactions. He used nothing but A.B. insulin until March, 1924, when he recommenced Lilly insulin, and for a few days had marked protein reactions, immediate urticarial wheals round the injection, and much local swelling, itching, and pain. He had obviously had time in the interval of six months to become sensitised to pig protein. When he changed to A.B. and B.W. insulin six months later, no protein reactions ensued. He is not sensitive to pig protein by mouth, and when he had an odd injection of Lilly insulin a few days ago it caused no protein reaction, probably because Lilly insulin, like all insulin, is now much freer from protein. He now uses both A.B. and B.W. insulin and nothing occurs locally except slight stinging, which occasionally becomes more marked when he changes the site of injection or uses a different batch of insulin.

An obese woman of 50 has had much trouble with delayed local reactions. These commenced on the fourth day of treatment when she was having two doses of 10 units. They became more severe and by the tenth day a hard, hot, brawny and painful swelling occurred at the site of every injection and were a great affliction. She felt general malaise and her temperature rose in the evening for two days to 100° F., for which no other cause than the insulin could be discovered. During this pyrexial period the insulin was partially ineffective and the dose had to be nearly doubled to obtain the same result. The reactions then began to decrease but were quite troublesome for another four months. Both A.B. and B.W. insulin caused these reactions, but after six months they had practically disappeared. When she changed her insulin from one batch of B.W. insulin to another (from batch 282 to 280) severe local reactions suddenly reappeared.

Another male patient, aged 62, commenced treatment with B.W. insulin and experienced severe stinging and delayed reactions which at once disappeared when he substituted A.B. insulin.

Variations in Quality of Insulin.

I do not think we can conclude in any way that one make of insulin is better than another, but that some brands and batches of insulin suit one patient better than another. Undoubtedly, pig insulin (Lilly) is more likely to cause protein reactions than ox insulin. It is no secret that great variations have occurred and probably do still occur to a less degree in the strength of different batches of insulin, and it would appear that qualitative changes whose effect can be observed on patients also occur. It is wrong to condemn a special make or batch of insulin because it seems to disagree with certain patients. Individual variations must be recognised and different preparations of insulin may have to be tried to suit exceptional cases. But we have every reason to be proud of and to congratulate the manufacturers on the high quality of the insulin produced in this country—and to be thankful for the low price.

Some Useful Points.

Every attempt should be made to make the daily injection of insulin as comfortable and easy as possible, and in this connexion the following points may be useful. It gives far the least trouble and is entirely satisfactory to keep the syringe and needle sterile in spirit in a metal case or glass test-tube. A non-irritant skin disinfectant must be found for every patient in whom variations to different antiseptics occur. The pain of the puncture can be minimised by the use of fine and sharp needles, by inserting the needle as nearly at right angles to the skin as possible, thus traversing as little skin as possible, as this is the painful part of the injection. Usually, by moving the point of the needle lightly over the skin it is easy to find a spot which is quite insensitive to the prick and where the injection can be made quite painlessly, because it avoids the nerve-endings for pain. The sting of the insulin is usually very slight and it can be made less by pinching somewhat vigorously the skin and underlying tissues into which it is being injected. The best sites for injection are the parts of the body where the skin is loosest and which are not subject to pressure or to much movement in the underlying muscles. The calves are unsuitable because the skin is very tight over them, and the best places for self-administration of insulin are the front and outer aspects of the thighs, the abdomen, and the lower part of the chest where both hands can be used in the injection. The forearms and outer sides of the upper arms are also available when someone other than the patient is giving the injection. By these means the initial repugnance that many patients feel to daily injections soon gives way to the indifference of an easy habit.

ACETYLENE, ETHYLENE, PROPYLENE.*

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THERE are many unsaturated hydrocarbons, some of which have anæsthetic properties. Three of them, acetylene, ethylene, and propylene, have recently been the subjects of investigation, and as the reports of the first two, and the preliminary notice of the third, appear favourable to their anæsthetic value, it was decided to undertake an experimental and clinical inquiry into these gases. This work, with the coöperation of Prof. M. S. Pembrey, F.R.S., has been in progress at Guy's Hospital for some months. It may be said at once that whilst a favourable view has been taken of ethylene, acetylene, for reasons given below, was discarded after a short trial, and propylene has received as yet insufficient trial to warrant the drawing of definite conclusions.

The mode of action of these gases is not known. They are inert, non-toxic gases, carried in simple solution in the blood. If ethylene is passed through diluted dogs' blood the absorption bands of oxyhæmoglobin remain unaltered. They are rapidly absorbed and rapidly eliminated. It is supposed that, like nitrous oxide, they have a direct action on the cells of the central nervous system by interference with oxidation. It is of interest in this connexion to note that ethylene anæsthetises certain plants. The Chicago carnation-growers discovered in 1908 that the illuminating gas used in the houses, which contains 4 per cent. ethylene, caused the flowers to go to sleep, and prevented the buds already showing petals from opening. A concentration of 1 in 2,000,000 parts of air is sufficient to cause these flowers to close. The same concentration had a similar action on castor-oil plants and sweet peas. These facts show that anæsthesia is a more complicated process than an effect upon a specialised nervous system. How these gases interfere with metabolism is not known. An investigation to decide the question is being conducted by Prof. Pembrey.

Animal experiments having been carried out by us with these gases, they were then used on patients. A sight-feed apparatus was employed, and anæsthesia was conducted upon the lines of nitrous-oxide-oxygen anæsthesia, with partial rebreathing. In some cases soda-lime was used to absorb the CO_2. In all cases a preliminary injection of atropine was given. Details of the animal experiments will be published at a later date.

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* This research has been carried out on behalf of the Joint Committee of the Medical Research Council and the Section of Anæsthetics of the Royal Society of Medicine.

I.—ACETYLENE.

The results of earlier workers[1, 2, 3] with acetylene were discouraging; experimental animals either died suddenly or after some hours if the concentration of acetylene was low, even though they had been removed from its atmosphere. Wieland,[4] during an investigation into the pharmacological properties of this gas, obtained similar results, and it was not until he experimented with pure acetylene that he was able to show that low concentrations are harmless even when administered for prolonged periods. He carried out an extensive research, and having demonstrated that the gas provides a safe and non-toxic anæsthesia, persuaded Gauss to give it a clinical trial. So satisfactory were the results that several thousand successful cases of anæsthesia have been reported by Gauss,[5] and later by Solbach,[6] Döderlein,[7] and others.

TABLE I.—ACETYLENE.

No.	Sex.	Age.	Condition.	Operation for—	Anæsthetic.	Injection atropine or morphine.	Time, in mins.	Proportion of gases.	Vom.	Nausea.	Remarks.
1	M	12	Good.	Undescended testis.	Acet.-oxy.	1/100 A.	25	75 : 25 60 : 40	4	0	½ hr. after anæs. still dazed, completely conscious in 1 hr.
2	F	6	,,	Tubs. cervical gland.	Gas-oxy. acet.-oxy.	1/100 A.	12	Do.	1	0	—
3	F	3	Toxic.	Exploration of hip-joint.	—	1/150 A.	45	60 : 40	0	0	Glycosuria before op., still present third day, absent fifth. Ethylene on previous occasion.
4	M	18	Good.	Hallux rigidus.	—	1/100 A.	43	60 : 40	1	0	—
5	M	24	Fat, nervous.	Rad. cure of ing. hernia.	—	1/6 M. 1/100 A.	23	60 : 40	0	Slight.	Urine normal after op.: 1/6 gr. M. during recov.
6	M	13	Good.	Undescended testis.	Acet.-oxy.	1/100 A.	37	50 : 50	0	0	Salivation at start. Urine normal after op.
7	F	38	Slight physique.	Hæmatoma of thigh.	Gas-oxy., acet.-oxy.	Do.	13	75 : 25	0	—	Nausea 12 hrs. Ethylene 14 days previously, nausea 12 hrs.
8	F	66	Stout.	Rad. cure of bilateral fem. hernia.	Acet.-oxy.	Do.	60	75 : 25	3	0	1/6 gr. M. before end of op.
9	F	19	Hysterical, good physique.	Ext. piles and sigmoidoscopy.	Gas-oxy. acet.-oxy.	Do.	32	75 : 25	4	Slight.	No anal or rectal reflex elicited.
10	M	25	Muscular.	Varicose veins.	Gas-oxy. acet.-oxy.	Do.	33	75 : 25	1	0	Slight salivation. Urine next day contained diacetic acid and substance which reduced Fehling's solution.
11	F	31	Good.	Amputation of 2 phalanges	—	Do.	23	75 : 25	1	—	Coughing after induction.
12	M	8	,,	Rad. cure of ing. hernia.	—	Do.	18	60 : 40	24 hrs.	—	Bronchial catarrh after op. for 48 hrs.
13	F	37	Toxic.	Pyosalpingectomy.	CE; acet.-oxy.	Do.	60	75 : 25 60 : 40	1	0	CE for 3 min. Salivation. Good relaxation 1/6 M. half way through op.
14	M	22	Good.	Rad. cure of fem. hernia.	Gas-oxy. acet.-oxy.	Do.	47	75 : 25	0	0	Salivation. Acute bronchitis following op. History of recent "cold."
15	M	21	Muscular.	Removal of lipomata of scalp.	—	Do.	15	Do.	0	0	—

Acet.-oxy. = Acetylene-oxygen. Op. = Operation.

Acetylene, C_2H_2, is lighter than air, and is very diffusible. It is soluble in water, 1 c.cm. of water dissolving 0·745 c.cm. at 37° C. at a pressure of one atmosphere. Blood under similar conditions dissolves slightly less—viz., 0·735 c.cm. Schoen and Sliwka[8] have shown that the percentage of acetylene absorbed by the blood is directly proportional to the partial pressure of the gas in the inspired air. In the first five minutes 88 per cent. saturation was found in the arterial blood of the rabbit, and saturation was complete in 17 minutes; elimination was complete in six minutes. In man, experiments with venous blood showed that 90 per cent. of the gas was eliminated in five minutes after withdrawal of the anæsthetic. Acetylene is non-toxic and highly inflammable. It forms explosive combinations with copper and silver. The dried and carefully purified gas, which is named narzylen in Germany, is put at a pressure of 15 atmospheres into steel cylinders filled with a porous material containing acetone, in which the gas readily dissolves. A 40-litre cylinder contains approximately 5 cb.m. acetylene. Impurities which have to be removed include chloride compounds and phosphoretted and sulphuretted hydrogen. The purified gas contains a very small amount of other CH compounds and some air. In order to remove acetone which comes over with the gas, special washing arrangements have to be provided. Another precaution against the escape of acetone is the provision of a meter which indicates the lowest working pressure—viz., 2–3 atmospheres. Acetone is unpleasant to inhale; pure acetylene is said to have no unpleasant odour. However this may be, it is customary to pass the gas through some substance (placed in the outlet valve) which has been saturated with a sweet-smelling oil. The gas which was obtained from Stockholm for the purposes of the Committee by the Gas Accumulator Co., and is stated to be purer than narzylen, possesses a distinctly disagreeable and somewhat pungent odour, and leaves a bitter taste in the mouth. Some of this objectionable odour is certainly due to inefficient removal of acetone.

Wieland found by animal experiment that a mixture of 45–55 per cent. acetylene with 55–45 per cent. oxygen anæsthetises white mice. The percentage varies very little with other animals. If the percentage is increased to 80 and upwards respiration becomes rapid, shallow, and irregular, and finally ceases; artificial respiration restores breathing. There is no action on the heart or vasomotor centre; death takes place from respiratory paralysis. For clinical use a mixture of 70–80 per cent. with 30–20 per cent. oxygen is used for induction, and is gradually replaced by 50 or 40 per cent. acetylene. Acetylene anæsthesia resembles nitrous-oxide, ethylene, and propylene anæsthesia in its mode of action, non-toxicity, rapidity of induction and elimination, and causation of death, but is superior to nitrous oxide and ethylene in depth of anæsthesia and in safety, for the percentage of oxygen is always higher than that contained in air. Unfortunately it is, like ethylene and propylene, inflammable, and the presence of a cautery or flame or electric spark in the immediate neighbourhood of the expired air is dangerous. Careful analyses [9] of the composition of the air of poorly ventilated operating theatres agree that the air contains a very small proportion of acetylene; near the patient's head the percentage was 0·8–1. Higher concentrations were never found. Von Sturm's figures agree with these. The explosion limits are 3·35–52·3 per cent. Hollemann places the lower limit at 3·82. Rimarski [10] states that the great diffusibility of acetylene and its slight concentration in the theatre account for the very large number of operations performed with the thermo-cautery without any disturbance. Döderlein was less fortunate.[11]

Induction with a 75 per cent. mixture of acetylene in oxygen takes place in about one minute without struggling or excitement, and without unpleasant sensations, except those of smell or taste; in order to overcome this objection gas-oxygen was administered in some cases for a few breaths, and acetylene then run into the bag with an increasing quantity of oxygen as the partial pressure of acetylene rose. Maintenance of anæsthesia for prolonged periods is easy, the percentage of acetylene being gradually reduced. The breathing is, as a rule, easy and quiet, but its character depends partly upon the type of patient and partly upon the method of administration—i.e., upon the extent of rebreathing. Rimarski [10] examined the composition of the expired air in 11 cases, and found that whilst the percentage of acetylene and oxygen in the samples analysed corresponded fairly accurately with the percentages registered by the Drager apparatus, the percentage of CO_2 never exceeded 1·7, the range being 0·5 to 1·7. With this apparatus the expired air escapes directly into the operating room. Solbach and Hazelhorst speak of the frequent occurrence of apnœa; this is certain to occur, owing to acapnia, if some rebreathing is not practised. The CO_2 content of the inspired air exerts a profound influence both upon the rate of breathing and the extent of peripheral vaso-dilatation, and therefore again upon the character of breathing by reason of congestion of the air-passages. Congestion leads to some degree of respiratory obstruction, and it is obvious that if the rate of breathing is raised, and the air-passages slightly obstructed, respiration will gradually become hampered and the tendency to obstruction increase, even in the presence of an excess of oxygen. This difficulty can be partly overcome by a lessening of the rebreathing factor; absorption of CO_2 by soda-lime completely removes it.

The presence of small quantities of acetone, which is irritating, produces in some cases swelling of the mucous membrane of the upper air-passages and salivation, and tends to embarrass breathing; no salivation occurred in our animal experiments. It is highly desirable to remove all traces of acetone, not only for this reason, but also because its odour is disagreeable to the patient if induction is carried out with acetylene. This removal, however, is difficult, as the gas, which is administered at about the rate of 3 litres per minute, carries over with it an appreciable amount of acetone. An elaborate washing apparatus was not considered desirable from the point of view of simplicity and convenience. The matter was therefore referred at my request by the Committee to Dr. H. King, of the National Institute for Medical Research. After many experiments Dr. King reported that "the only effective and economical system of washing would be the counter-current system, a tower filled with beads or Lessing rings of inert metal down which a thin stream of water is running, thus providing efficient washing surface for the upward current of acetylene." This method proved to be successful, "not a trace of acetone being found after passing 6 litres of acetylene in five minutes, the volume being about 300 c.cm. or equivalent to a column 8 in. high and 2 in. in diameter." This apparatus, besides being somewhat fragile, I found to be not wholly suitable for clinical use, for it requires the provision of a pipe or tube connected with a water supply for leading in water, and a second for removing it. The Drager apparatus used by Gauss contains a special washing apparatus, but there is some evidence to show that it is not entirely efficient. Goldman [12] has met with the same difficulty; he also states that acetylene loses some of its anæsthetic properties by the removal of acetone, which is known to be a weak anæsthetic.

The pulse in a normal case remains steady and full; if the partial pressure of CO_2 is high the rate slows and the blood pressure falls. Blood pressure usually falls slightly in a normal case. Muscle tone is much diminished, the eyelids being semi-relaxed and exposing the globes, which are fixed in the cadaveric position. Occasionally they roll slowly from side to side. The pupil is slightly dilated and reacts briskly to light. Conjunctival reflex is absent, corneal reflex present but dulled. Swallowing reflex is absent, cough reflex present. There was no reflex effect upon respiration during traction on the sac in Cases 5 and 8, nor during operation on Case 9 (Table I.). The amount of bleeding is slightly increased, but whether this is due to the action of acetylene or to the vaso-dilatation effect of CO_2 is not certain; judging from improved results obtained by absorption of CO_2 during ethylene anæsthesia I am inclined to think that acetylene is not the chief cause. Recovery is very rapid, consciousness being regained in 2–3 minutes. Acetylene could be smelt in the breath for some hours afterwards. Leake and Hertzmann[13] state that the pH of blood determined colorimetrically undergoes a slight fall.

It was tried in only one case of laparotomy—and then successfully—for I felt convinced that it would provide an inefficient anæsthesia in all but exceptional cases. It is possible that by cutting down the percentage of oxygen in the mixture a greater degree of muscular relaxation can be obtained, but this dangerous aid to anæsthesia is obviously undesirable. Care was taken on all occasions to administer not less than 20 per cent. oxygen, nor was it desirable to employ other adventitious aids to anæsthesia—e.g., ether and morphine and scopolamine—as this inquiry was undertaken with the sole object of ascertaining the merits and demerits of acetylene as an anæsthetic for surgical purposes. It is true that a preliminary injection of morphine was given to Case 5 (Table I.), but it was so given to allay undue nervousness, and the operation could well have been carried out with acetylene alone. Anæsthesia was in all cases completely satisfactory. But as the odour of acetylene, the removal of acetone, and the tendency to salivation seemed to present weighty objections to its continued use, the inquiry was abandoned, more especially as two other members of this group—viz., ethylene and propylene—appeared likely to afford more favourable results.

II.—Ethylene.

The history of the discovery of this anæsthetic is too well known to require narrating: a full account has been given by Brown,[14] and Luckhardt and Carter,[15] who first administered it to human beings. Possessing the formula C_2H_4, it has a specific gravity of 0·9784, boiling-point of −105° C., and melting-point of −169° C. It is sparingly soluble in water (0·149 c.cm. at 20° C.). It liquefies at 10° C. under a pressure of 60 atmospheres, and is pumped into cylinders at a pressure of about 1200 lb. Being an inflammable gas under pressure it is very sensitive to changes of temperature; the cylinders must not be stored near any source of artificial heat nor left in the sun. The relative explosion hazards of ethylene and ether when mixed with air or oxygen are practically equal. It is stated that metal tubing should be used for all connexions of the anæsthetic apparatus as there is danger of a static spark occurring due to the friction of the passage of the gas through rubber tubing. Luckhardt[16] quotes two cases of explosion which are said to have been due to this cause. A mixture of 4–15 per cent. ethylene in air forms an explosive mixture, and if the oxygen percentage exceeds 40 an electric spark produces a violent explosion.[17] Experiments have failed to reveal detectable traces of ethylene after 1½ hours' continuous administration in a well-ventilated theatre. There is, then, no danger to be apprehended during ethylene anæsthesia if precaution is taken not to use a cautery, flame, or any source of electrical discharge in the immediate neighbourhood of the patient. Accidents due to neglect of this precaution have been recorded.

Ethylene has a slightly disagreeable odour, the strength of which seems to vary in different samples. Hewer[18] states that the gas made for him at St. Bartholomew's Hospital had a rather pleasant ethereal odour, differing from the pungent smell of imported ethylene. There are at present no standards of purity, but the manufacturers claim that they are improving their processes and obtaining a gas of better quality. Some patients object to the smell and also complain of an unpleasant taste in the mouth on recovery, others do not notice anything disagreeable during induction. The difficulty is overcome by induction with gas and oxygen, the change from this to ethylene being easily made. I confess that there were occasions at the beginning of this research on which I shared the dislike of the patient for this gas, and that the surgeons and I have not found ethylene to possess "a rather pleasant ethereal odour." My experiences with it, however, which corroborate those of other observers, persuade me that it is too valuable an anæsthetic to be condemned for this particular failing, and if the process of manufacture continues to improve there seems every reason to hope that this reproach may be entirely, or at any rate almost entirely, removed. In several of my cases a roseolous rash, similar to an "ether rash," has appeared very shortly after induction and has persisted for 10–15 minutes; in one of them it was vivid and affected the whole body. It does not seem likely that the presence of this rash is an indication of impurity in the gas, for it is known to occur commonly under ether and mixtures containing ether. Its presence, was, however, somewhat surprising, for I had not seen any record of it in the literature.

A mixture of 80 per cent. ethylene and 20 per cent. oxygen produces anæsthesia in mice and rabbits, but rats require a 90 per cent. mixture. In man, induction with 90 per cent. is rapid, consciousness being lost in one minute or less; the percentage of oxygen must then be gradually increased to 15 or 20; it is only in exceptional cases that more than 20 per cent. of oxygen can be given to adults. As with other anæsthetics, the nature of the operation and the type of patient are determining factors. The flow of the gases per minute through meters has been recorded in a few cases, examples of which are given in Table II.

TABLE II.

Sex.	Age.	Condition.	Operation for—	Injection.	Proportions of gases.
M.	56	Powerful build.	Injection of alcohol.	1/100 A.	40 lit. ethylene, 10 lit. oxygen.
F.	60	Frail.	Laparotomy.	1/100 A.	75 lit. to 21 lit. in 16 mins.
F.	47	Slight build.	Carcinoma mammæ.	1/6 M. 1/100 A.	Average per cent. Oxygen = 26·3.
F.	24	Muscular.	Rad. cure of ing. hernia.	1/100 A.	30 lit. to 12 lit. in 6 mins.

The relative proportions of the gases flowing through the sight feed mixing chamber of the apparatus have been determined as accurately as possible; analysis of the gases taken from the face-piece during inspiration and expiration were made in two cases (Table III.).

TABLE III.

Sex.	Age.	Operation for—	CO_2.		O_2.	
			I.	E.	I.	E.
F.	31	Varicose veins.	2·5	3·0	27·3	22·5
F.	30	Thoracoplasty.	2·7	2·8	23	21

Luckhardt[19] finds that an average of 87·6 per cent. ethylene was used in 800 cases. It will be seen that this compares very favourably with nitrous oxide, but unfavourably with acetylene and propylene, and although 1100 cases have been anæsthetised at the Presbyterian Hospital, Chicago, without a fatality or any condition arising which was considered serious, it is no less true that an average of less than 13 per cent. of oxygen represents a shortage of oxygen, and signifies that wise selection of cases and careful and skilful anæsthesia are essential. The respiratory centre is paralysed by an overdose; artificial respiration restores breathing in the normal individual. Death takes place from failure of respiration.

The attempt to obtain satisfactory anæsthesia must not be met by cutting down the oxygen supply, but either by a preliminary injection of morphine or the addition of ether, very small quantities of which are needed to convert a refractory into a placid patient. High blood pressure, arterio-sclerosis, emphysema, myocarditis are conditions which contra-indicate the use of ethylene, for although the normal individual can withstand a cutting down of oxygen for a considerable time, the handicapped patient is seriously embarrassed, and not only does he run an undue risk during anæsthesia, but his recovery is prejudiced by the starvation of the central nervous system of oxygen and the strain thrown upon his cardio-vascular system by cyanosis. It is necessary to lay stress upon these dangers, not because they are not known but because they are in danger of being forgotten. If ethylene is to be adopted at all extensively its limitations must be known. It produces a degree of muscular relaxation which is definitely superior to that of nitrous-oxide-oxygen but much inferior to that of ether.

The operations in which I have used ethylene number 68, five being dental extractions. This is a small number, but sufficiently large to allow of a definite opinion of its value being formed, including, as it does, in adults, 10 operations for hernia, 11 on the limbs, 5 amputations of the breast (1 double amputation in a male), 4 thoracoplasties, 3 for pulmonary tuberculosis and 1 for pulmonary abscess, 3 laparotomies, 1 phrenicotomy, and removals of glands, testicles, hydrocele, &c. In one laparotomy no ether was used, in one ether was used for about a minute at the start of the peritoneal suture, in the other ether was substituted for ethylene. In children 15 operations have been done for hernia, tuberculous glands of neck, &c., the youngest child being aged 11 months.

Relaxation has been almost uniformly good. In addition to the cases already mentioned, ether was added in four other cases for a few breaths—e.g., during the skin incisions of amputations of both breasts in a robust male. A preliminary injection of morphine, gr. 1/6, has been given in 26 cases, partly with the object of calming a highly nervous patient and at the same time of supplementing the action of ethylene, but chiefly in order to ensure a recovery free from pain following extensive operations.

One child, aged 14 months, developed bronchitis after an operation for bilateral inguinal hernia; no other complications occurred. Albuminuria and glycosuria have not occurred. Acetone was smelt in the breath of two patients on the day following operation, and the urine of a child contained diacetic acid. No systematic examination of the urine has been made. Vomiting occurs commonly during the return to consciousness and does not, as a rule, recur: ten patients vomited more than once, two of these severely. Thus the great majority of patients make an excellent recovery and are ready in a short time to take food or liquid. Oberhelman and Dyniewicz[20] found that the increase in blood-sugar and decrease in alkali reserve were less with ethylene than with ether, chloroform, or nitrous oxide; at no time in uncomplicated conditions did the change approach a dangerous level.

III.—PROPYLENE.

This gas, C_3H_6, which is colourless, has an odour somewhat resembling that of ethylene. Its density compared to air is about 1·7, boiling-point is $-48{\cdot}2°$ C. It is soluble in water, 100 volumes absorbing 44·6 volumes at 0° C. Absolute alcohol dissolves 12–13 volumes. It is liquefied at ordinary temperatures by a pressure of 7–8 atmospheres; 8 oz. of liquid propylene correspond to 100–110 litres of the expanded gas. Using cats as experimental animals, Easson Brown[21] found that concentrations of propylene varying from 50–37 per cent. produced good anæsthesia in a few minutes. Maintenance was carried on with 20–30 per cent. without any signs of poisoning. With concentrations of over 70 per cent. there was a fairly rapid fall of blood pressure. Anæsthesia was induced in man in two minutes with a 50 per cent. concentration; recovery was rapid, without any unpleasant after-effects.

The results obtained by Prof. Pembrey and myself with rats, a cat, and rabbit, using different concentrations, were satisfactory both as regards anæsthesia and freedom from signs of irritation; recovery was rapid. Propylene was then given to three adults, after a preliminary injection of atropine, two of the operations being for inguinal hernia, and one for the removal of a nævus: two of the patients were men of powerful physique. In all cases marked flushing of the face, neck, and chest followed induction; it gradually subsided. Consciousness was lost rapidly; in one patient unconsciousness came on after the second breath. Relaxation was good. Salivation, and in one case also lacrymation, was profuse. Recovery was quick, but less rapid than after ethylene. No vomiting, nausea, or broncho-pulmonary sequelæ occurred. The investigation was suspended at this stage until, by improved methods of manufacture, all impurities could be removed from the gas, for it was considered likely that the occurrence of these signs of irritation was due to the presence of unsaturated alcohols or aldehydes.

I wish to acknowledge my indebtedness to Dr. J. H. M. Campbell and Messrs. Skelton-Browne and Kanaar for undertaking gas analyses, and to the latter two for valuable assistance in other directions.

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Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF ELECTRO-THERAPEUTICS.

A MEETING of this Section was held on May 15th, Dr. STANLEY MELVILLE, the President, being in the chair, when the adjourned discussion on

High Voltage and Radio-therapy

was continued.

Dr. J. H. D. WEBSTER, in presenting a résumé of his previous paper,[1] remarked that the method of prophylaxis by means of intensive therapy had been violently attacked abroad; the question was whether the poor results there obtained were in some way dependent on the malnutrition of the patients following the war years. Other observers had claimed good results from one or two applications administered through wax, but on the whole he agreed that the medium voltage was best for prophylactic purposes. In his opinion, Dr. Gilbert Scott's method of general radiation was inadequate. The work of Sampson Handley had shown that any prophylactic treatment must be applied in advance of the appearance of physical signs and that the supraclavicular triangle was an essential danger zone. Yet this zone received the least amount of treatment in Dr. Scott's method. With regard to the question of a "stimulation dose" of radium, Dr. Webster had seen several cases where radium had been the apparent cause of a widespread recurrence all round the area treated. Radio-therapy must work hand in hand with pathology in all its branches, including morbid anatomy, histology of new growths, and the biochemical changes in the body.

Dr. GILBERT SCOTT pointed out that the effects of radio-therapy were both direct and indirect. At the present time it was possible to get any desired dose for surface treatment, and yet the position was unsatisfactory; radiologists could not expect to be satisfied with their treatment of deep tumours. Prophylaxis was very complicated because there was nothing tangible to treat; it was therefore necessary to assume the worst and endeavour to deal with a patient as if he had potential stray metastases all over his body. On such a hypothesis it would be wrong to restrict the treatment to any localised area. The indirect effect was concerned with stimulating nature to destroy the pathological cells herself. It should be possible to catch these cells while they were few and isolated, and to that end his method was directed. He admitted it was crude, but he was doing his best along those lines, and he combined it with local treatment. Nodules were liable to develop just outside the area which had been radiated, and it was therefore a mistake to treat in too local a way.

Prof. S. RUSS said that although it might be difficult to be sure of the indirect effects of radiation in patients, it was easy to get proof of them in animal experiments. A big dose could lower the resistance of an animal to an implanted growth while repeated small doses increased the resistance. The line along which deep X ray therapy had developed was that of the large dose; he thought that the best criterion was not the dose that would prevent the growth of cells, taking no account of the resistance of the individual, but the minimal dose consistent with a beneficial effect. The development of more penetrating radiations had gone ahead without sufficient experimental warrant.

Dr. ROBERT KNOX read a paper on the

Nature of Tissue Response to Radiations.

He said that the problem was in no sense strictly physical. It was of no use to produce higher and higher voltages or increasing quantities of radiation. There was a third factor which was a fundamental consideration—namely, the type of cell to be dealt with, the phase of its activity at the time of exposure, and the fact that the response of normal tissues played a vitally important part in the treatment of disease. Attention must be centred on the cell as the ultimate biological unit, and in this connexion the blood was worthy of more observation as a valuable guide in therapy. A complete blood-count should always be done before any treatment was initiated. Abnormal types of cell, such as myelocytes, were far more susceptible to electro-therapy than the more fixed forms. Illustrating the "indirect effect," Dr. Knox showed a number of charts demonstrating the continued diminution in the white blood cell-count in leukæmic cases after the cessation of treatment. He was in sympathy with Dr. Scott's method and was convinced that something on those lines would prove an important development in radiation therapy in the near future, particularly in the prophylactic treatment of carcinoma. Therapy should aim at control rather than at a knock-out blow. It was possible so to sensitise the tissues with a course of radiations that an alteration in the quality and voltage would then be followed by a striking result.

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[1] THE LANCET March 28th, p. 661.

Dr. G. W. MITCHELL said that he had never seen a case of stimulation or acceleration of a growth due to radiation. He objected to the use of the term "prophylaxis" when dealing with "recurrence." He believed that much harm had been done by the intensive treatment; he had given up the lengthy periods of application and now distributed the doses over two or three days, often giving seven or eight treatments. He described various cases which had been successfully treated in this way. He expressed his belief in the method of widespread treatment in the prevention of recurrences.

Dr. N. S. FINZI said that radiation treatment was at present in a state of flux. It was very important to decide whether a neoplasm was originally a local disease, only subsequently becoming generalised, as was usually stated, or whether it was a general disease, as suggested by Thurstan Holland and Dr. Scott. He asked whether the generalised treatment for carcinoma had ever been successful; cases treated by X rays and radium often remained well for many years. It appeared that the softer radiations did not do so well in carcinomata nor endotheliomata; for these conditions radium or mixed treatment should be used, the X rays alone being more suitable for sarcoma. Epithelioma of the tongue, particularly, showed very bad results if treated with radium, although recent reports from Paris showed more satisfactory statistics. Lymphosarcoma responded readily to any type of ray. Local treatment of growths and also of metastases was successful in a certain number of cases if applied over a wide enough area. It must be admitted that intensive treatment was dangerous, but it was an attempt to deal with a dangerous disease. Cases should be grouped as to whether the aim was palliation or destruction of the growth. In the first group, Webster's method was satisfactory; in the second group more penetrating methods should be employed. When very penetrating radiations were used a late effect was found to occur, some months after, and this must be remembered when another kind of treatment was being applied after an interval.

The Prevention of Radiation Sickness.

Radiation sickness was now of infrequent occurrence except where the upper abdomen was being radiated, and then it was inevitable. To avoid it in other cases the room should be thoroughly ventilated, corona-less leads must be used, and the ends of the tube must be protected from corona; ozone and nitrous oxides must be expelled from the air of the room and chloretone administered. It was better not to give too much at one time; the treatment might be spread over days or weeks. The danger of harm to the lung was largely one of method; treatment of the mediastinum should be avoided where possible, but damage to the lung was not an inevitable result if care were taken.

Dr. F. HERNAMAN-JOHNSON agreed with Dr. Scott's method. He considered that in dealing with breast cases which had been operated on under favourable conditions it was not justifiable to take risks. Such patients had a fair expectation of life in any case, and the radiologist must not do anything to harm them. The basis of treatment should be the lines followed in dealing with tuberculous patients—i.e., attempts to raise the general resistance with special attention to the particular area under suspicion. He was accustomed to radiate widely, shielding the face only, with small doses, 1½ to 2 milliamps. with a 3 mm. filter for 10 to 15 minutes. Under such treatment tumours might entirely disappear and patients would say they felt much better and stronger. An effort should be made to treat the body as a whole, but the system would only stand a certain amount as shown by the blood effects produced by over-treatment. Sunlight and ultra-violet rays raised the blood-picture and courses of this treatment should alternate with exposure to X rays.

Dr. J. E. A. LYNHAM described the successful treatment of a case of tonsillar tumour with extensive involvement of the cervical glands. Preliminary treatment with X rays appeared to make the condition worse, but improvement immediately followed the insertion of radium needles in the throat. Possibly the earlier treatment sensitised the patient. The condition continued to improve after the suspension of treatment. Similarly, the best results in inoperable carcinoma of the uterus had followed the use of radium at the primary focus followed by wide irradiation of the pelvis. The size of the aperture appeared to have considerable importance, as revealed by experiments on chemical solutions.

Replies.

Dr. WEBSTER, in reply, agreed that if the X ray bath were given over a wide area it must be given for a very limited period of time. Much depended on the total volume dose, which was very difficult to work out. He did not consider that Dr. Scott had established his views, and asked him to publish cases. In reply to Prof. Russ, he pointed out that the experimental evidence was concerned with implanted tumours; there was no evidence that generalised small doses improved spontaneous growths.

Dr. SCOTT, in reply, agreed that varying dosage was of great importance; it was a mistake to stick to one method only. He considered that by the time a cancerous patient reached the radiological department his disease was undoubtedly to be regarded as a general one. The aim of the radiologist should be to prevent distant metastases ever occurring.

BRISTOL MEDICO-CHIRURGICAL SOCIETY.

A MEETING of this Society was held at the University on May 13th, Dr. J. O. SYMES, the President, in the chair, when Mr. A. W. ADAMS read a paper on a case of

Fibrocystic Disease of the Humerus.

He introduced the subject by slides, showing the process of ossification at the epiphyseal line of long bones, a region particularly susceptible to disorders affecting growth, as well as to infections. Diseases of the osseous skeleton were then classified into age-periods, and also by ætiological factors. Twenty-eight slides were next shown to illustrate achondroplasia, rickets, multiple exostoses, septic infection of bone, syphilis, tuberculosis, osteitis deformans, and multiple enchondromata. Regarding primary and secondary neoplasms, Mr. Adams pointed out that quite good union might occur in a bone which had suffered a spontaneous fracture from neoplastic metastasis, and advised treatment of such fractures on usual lines. In the diagnosis of primary neoplasm of bone neither skiagraphic nor pathological evidence was so satisfactory as clinical experience. An illustration of one case of osteogenesis imperfecta and a skiagram of another were shown. Regarding osteitis deformans, of which a case was shown wherein one tibia only was affected, observed over a period of five years, the softening and bending were noted, and also the tendency for arrest of the process after a time; attention was called to the frequency of sarcoma occurring in such bones as a late phenomenon. The literature of fibrocystic disease of bones was reviewed and attention called to the frequency with which this affected one bone only, as compared to multiple cases. The comparative frequency of the affection arising in certain positions was observed, such being the upper end of the humerus, both ends of the femur, and the upper end of the tibia. Mr. Adams described his case, where the condition occurred in a boy at the upper end of the humerus and first seen 16 months previously; spontaneous resolution had occurred after three fractures. No treatment beyond splinting had been attempted. Mr. Adams thought such a course in this disease had not previously been described. He put forward the view that the disease tended to occur at joints allowing of rotatory movement, and suggested that repeated rotatory strains might be an element in ætiology. An endocrine factor had also been suggested.

Dr. T. C. BRENTNALL asked Mr. Adams whether it was indeed a fact that rotatory strains were greater at ball-and-socket than at hinge-joints. He thought that such joints as the shoulder, where rotation was a normal movement, suffered less trauma than hinge-joints from rotatory stresses.

Mr. A. R. SHORT mentioned another case of fibrocystic disease, of which they had seen the specimen that night; in this, both tibia and femur were affected.

Mr. C. A. MOORE referred to a case under his own care in which pathological evidence from different sources on the same piece of tissue was very varied. He agreed that spontaneous fractures due to neoplastic metastasis may be successfully treated on ordinary lines, and mentioned a case of simultaneous fracture of both femora treated in this way.

Reviews and Notices of Books.

CYTOLOGY.

The Cell in Development and Heredity. Third edition. By E. B. WILSON, Da Costa Professor of Zoology, Columbia University. New York: Macmillan Company. 1925. With 529 text-figures. Pp. 1232. 36s.

THE first edition, in 1896, had 371 pages and 142 figures. The present contains about four times as much. It is beautifully produced, and with a slightly larger page and rather smaller type it is less than twice as thick and weighs only 70 per cent. more. To commend its substance is superfluous. To English readers Wilson on the cell is *the* book on the subject, and in its new form it will continue to provide information, refreshment, and inspiration to those who go to it. Twenty-five years has been a long time to wait for a revised version, but the delay was perhaps wise. The rediscovery of Mendel's work coincided with the publication of the second edition in 1900, and the stormy metamorphosis of Prof. Wilson's subjects which ensued was hardly the time for stocktaking. Chromosomes and their manœuvres seemed at one time rather a dead topic. The wonderful concordance of cytology and the outward appearances of things which has been revealed in the meantime are the fullest justification of Prof. Wilson's persistent faith that there was more in them than there seemed. And he has provided once again one of those rare great books which are a starting-point for fresh knowledge, because they are a real statement of what is known. Every biologist should thank him.

PARASITOLOGY FOR MEDICAL STUDENTS.

By ALEX. MILLS KENNEDY, M.D. Glasg., Professor of Medicine, University of Wales; Honorary Physician, Cardiff Royal Infirmary. London: Humphrey Milford, Oxford University Press. 1925. Pp. 142. 10s. 6d.

Prof. Kennedy has found it advisable when teaching medicine to give demonstrations in order to recall to students the essential features of those parasites which are of practical importance from the point of view of the physician. In this little book, based on his clinical teaching, he has succeeded in presenting within the limited compass of 138 pages of text, richly supplied with illustrations, an account of the salient features and life-history of these parasites, and has added brief notes on the diagnosis, prophylaxis, and treatment of diseases caused by them. The six chapters are devoted to insects and arachnoids, tape-worms or cestodes, flukes or trematodes, round worms or nematodes, sporozoa, spirochætes, and fungi which are inimical to man. On the whole the teaching is that generally accepted. The author treats as separate and distinguishable three species of human pediculi, whereas we believe that modern zoological opinion recognises but one species. In the account of *Filaria bancrofti* no mention is made of thick films as being essential for the demonstration of this parasite. No mention is made of the newer methods of treatment of trypanosomiasis.

Parasitology in its application to medicine, especially tropical medicine, is a subject which, year by year, is looming larger in the curriculum. So many and diverse are the technicalities with which an undergraduate has little concern that a simple account of the more familiar parasites will be welcomed by medical students, and also by practitioners who have no time to study full monographs on the subject. Some of the microphotographs are quite excellent, notably those illustrating the first chapter. Others are less well reproduced, and this criticism applies especially to some of those depicting the various helminthic parasites. But here, as indeed elsewhere, the text is clear and easy to follow, even without pictures. We predict success for this handy little volume.

MICROBIOLOGY AND SEROLOGY.

Manuel Technique de Microbiologie et Sérologie. Par le Prof. A. CALMETTE, S. Directeur de l'Institut Pasteur; L. NEGRE et A. BOQUET, Chefs de Laboratoire à l'Institut Pasteur. Paris: Masson et Cie. 1925. Pp. 568. Fr.30.

THIS volume constitutes a compendium for those in charge of a bacteriological laboratory. Nothing, from the care of laboratory animals up to the preparation of antitoxic sera on a large scale, has escaped the attention of the authors. On all subjects they speak with authority. There has hitherto, to our knowledge, been no book available covering quite this field, and it should prove of inestimable value to all those charged with the ordering of a bacteriological laboratory, no matter how small or how large.

MEDICINE.

Manual of Medicine. Fifth edition. By THOMAS KIRKPATRICK MONRO, M.A., M.D., President of the Royal Faculty of Physicians and Surgeons of Glasgow; Regius Professor of Practice of Medicine in the University of Glasgow; Physician to the Western Infirmary. London: Baillière, Tindall and Cox. 1925. Pp. 1033. 25s.

IN the last edition have been incorporated new articles on lethargic encephalitis, seven-day fever, and tularæmia. The articles on diabetes and disturbances of the heart's action have been rearranged. There appears to be need for some rearrangement of the space allotted to certain sections; it is difficult to justify the allotment of 210 pages to diseases of the nervous system and only 110 to the digestive system, including the peritoneum. We have now such anomalies as the dismissal of cardiospasm in four and a half lines, whereas two pages are given to Landry's paralysis. We have read accounts of aphasia in other text-books which were fully as lucid and more in accordance with modern views than that here given. The revised section on diabetes would be improved by greater detail concerning the starvation methods of Graham and Allen; we are doubtful if any student could for himself work out an effective scheme of treatment from the description given in this book, but that could only be expected.

The volume would, we think, gain in value if the unillustrated section on skin diseases were omitted and the matters to which we have referred were revised in accordance with the space thus gained. The book is so helpful in most respects that meagre or too highly compressed sections are the more to be deprecated.

Nouveau Traité de Médecine. Edited by G. H. ROGER, F. WIDAL, and P. J. TEISSIER. Vol. XIV., *Digestive System.* Vol. XXII., *Muscles, Bones, and Joints.* Paris: Masson and Co. 1921. Each volume about 500 pages. Fr. 15. per vol.

THESE new volumes of the "Nouveau Traité de Médecine" conform to the high standard of their predecessors. They are profusely studded with plain and coloured illustrations, diagrams, and X ray photographs in such a manner as to give the reader an excellent survey of the diseases dealt with both from the pathological and clinical standpoints. The fourteenth volume completes the description of diseases of the alimentary canal, and is chiefly remarkable for the section on the pathology of the rectum, by R. Bensaude. Vol. XXII. will be found of value by all medical men interested in orthopædic problems. The section dealing with congenital dystrophies of bone, by O. Crouzon, is particularly instructive, and gives beautiful illustrations of such rare conditions as cleido-cranio dysostosis and the Klippel-Feil syndrome. The article on Rickets, by Prof. L. Spillman, of Nancy, forms an admirable survey of existing knowledge of the subject.

We are again able strongly to recommend this treatise to our readers.

PHYSIOLOGY.

An Introduction to Recent Advances in Comparative Physiology. By L. T. HOGBEN and F. R. WINTON. London: W. Collins and Sons. 1925. Pp. 212. 25*s.*

WHETHER form determines function or function form is as insoluble a problem as whether the owl or the egg came first. The classical comparative anatomist has not paid as much attention to physiology as he might, and the purest physiologists have shown a tendency to put structure by and pass histology over to the anatomists. Most common men have been content with the obvious fact that structure and function are insolubly connected with one another, and there has been in recent years a rapidly growing conviction that the methods of thought and action developed in modern physiology might with advantage be extended and applied to live organisms with a wider variety of anatomies than is shown by mammals and the frog. Hence we have the Society and *Journal of Experimental Biology*, and the permeation of zoological literature with physiological conceptions. The present admirable series of essays will convince any sceptic that the movement is a good one, from which much fruit may be anticipated. The book is no attempt at a systematic survey, but, in imitation perhaps of the Recent Advances in Physiology and Further Advances which Dr. Leonard Hill organised so successfully some 15 years ago, deals with a series of interesting topics chosen partly because they represent growing points, and partly because the authors felt moved to write about them. The chapters are on the fertilisation of the egg, the development of the individual, sources of vital energy, the mechanism of response, coördination, behaviour in animals, hereditary transmission, the material basis of inheritance, and the determination of sex. The last three are perhaps over-written subjects just now, but in all the essays the zoologist will find information brought in from human physiology, while the human physiologist will learn how extraordinarily curious and interesting are some invertebrates, and may appreciate the extent and fascination of the unworked field which lies among them. The writing is clear and easy to follow.

DEVELOPMENTAL ANATOMY.

A Text-book and Laboratory Manual of Embryology. By LESLIE B. AREY, Professor of Anatomy at the Northwestern University Medical School, Chicago. London and Philadelphia: W. B. Saunders Company. 1924. Pp. 433. 27*s.* 6*d.*

THIS volume is at first sight but a new and slightly varied edition of Prentiss and Arey's well-known manual, but a closer inspection shows that Prof. Arey's statement in his preface, that in plan and content the work is essentially new, is justified. We are glad to see a recognition of F. M. Balfour's fundamental work in this book. A good, though short, account of changes in form during growth is given. Many of the excellent illustrations are taken from Prentiss and Arey, and these, with the new drawings, form a valuable part of the work. Figs. 6, 166, and 312 require some editorial attention, as do also parts of the text. No normal human heart goes through such developmental stages as are shown in Kollmann's figures, reproduced in Fig. 177 of this work; such figures ought to be relegated to obscurity. These faults are minor matters, hardly detracting from the general excellence of the book, which we recommend without hesitation to students as a good and very readable treatise.

LEEDS PHILOSOPHICAL AND LITERARY SOCIETY.

The History of 100 Years of Life of the Leeds Philosophical and Literary Society. By Lieut.-Colonel E. KITSON CLARK, Hon. Secretary. Leeds: Jowett and Sowry, Ltd. 1924. Pp. 210.

THE Leeds Philosophical and Literary Society was founded in 1818 mainly owing to a letter to the *Leeds Mercury* by Edward Baines, jun. (afterwards Sir Edward Baines). Colonel Kitson Clark quotes the letter in full, and considering that it was written by a boy aged 18, its style and matter are astonishing to read nowadays. To take one passage:—

> "In the full possession of youthful vigour, and in the unrestrained flow of intellect and imagination, how can a young man be more usefully or honourably employed than in the acquisition of knowledge, which must render him *respectable and superior in life, and in the cultivation of* those noble powers which alone exalt man to an infinite height above the brutes. . . ."

Incidentally such a style must have been fairly common among the educated young at the beginning of the last century, for some of Jane Austen's incomparable young women talk in the same way. The society being formed naturally desired a building wherein to meet, and such a building was accordingly erected in Park Row and opened in 1821. The first report of the society contained some information which will surprise no one—namely, that the original estimate for land and building which had been £4000 had been exceeded by at least £1000. This deficit was made up by the generosity of two members, Mr. J. Marshall and Mr. Benjamin Gott.

Colonel Clark's history is very complete; he gives a list of all the original members, with many extracts from the annual reports, and comments thereon, together with some account of the various lecturers and their lectures. In one place we fancy that owing to a natural desire to exalt the year 1818 he has erred, for he says on p. 2 of that year that "Turner and Landseer were at their zenith." The former we should say was at his great period from 1820 to about 1840, but Edwin Landseer was only 17 in 1818, and John Landseer, Edwin's father, is chiefly known by his engravings after his son's pictures. Colonel Clark gives a full list of all the lectures delivered and papers read before the society from 1819 to 1920, which makes most interesting reading. The society appears to possess a historian worthy of its well-deserved renown.

An Outline of Endocrinology.

By W. M. Crofton, B.A., M.D., Lecturer of Special Pathology, University College, Dublin; Pathologist, Dr. Steevens' Hospital, Dublin. Edinburgh: E. and S. Livingstone. 1924. Pp. 126. 6s.

This book contains the substance of the lectures Dr. Crofton has delivered annually at University College, Dublin, since 1910. It consists of ten chapters, of which the first six are devoted respectively to the pineal, pituitary, suprarenal, thyroid, parathyroid, and thymus glands. Chapter VII. deals with the gonads, Chapter VIII. with the hormones of the gastro-intestinal tract, and Chapter IX. with the pancreas, while the last chapter is entitled Epilogue. The subject-matter is illustrated throughout by reference to clinical examples and has been brought well up to date. Indeed, in some places, notably Chapters IV. and IX., the results of recent and as yet uncontrolled work are accepted without reserve. The volume is handy, easy to read, and is written in an attractive style. The closing chapter dealing with theoretical conceptions is in parts not easy to follow. The illustrations are well chosen and for the most part new.

The Engines of the Human Body.

Second edition, revised and enlarged. By Sir Arthur Keith, M.D., LL.D., D.Sc., F.R.S., Conservator of the Museum and Hunterian Professor, Royal College of Surgeons. London: Williams and Norgate. 1925. Pp. 313. 12s. 6d.

Prof. Keith's book embodies the Christmas lectures delivered to an audience of boys and girls at the Royal Institution in 1916-17, and this second edition has increased by 60 pages without increase in price. In the meantime the author has become secretary of the Institution and his services to anatomy publicly honoured. The increase in size is due to the necessity of expanding certain growing subjects, such as the muscles of athletes, thinking and health, vitamins, insulin, and hormones, and the human body as a society of microscopic units. The additions are mainly to be found in appendices. In its new form the book, while scrupulously based on the facts of structure, goes far to redeem anatomy from the stigma of a dull subject and anatomists from being dull fellows. In every page structure is correlated with function in such a way as to make the workings of the body clear to the unlearned, whether or not they have outgrown girlhood and boyhood.

JOURNALS.

British Journal of Ophthalmology. April-May.—In the April issue Prof. Schiotz gives fresh corrected graphs to be used with his tonometer. At present, unfortunately, tonometers are not all similarly adjusted. A centre has been established at Oslo where this can be done, whence also adjusted tonometers can be obtained.—Prof. O. Leser, of Prague, writes on the Development of the Extra-ocular Muscles in Some Mammals, and W. Gordon Byers on cases of Traumatic Keratitis in the New-born, a condition which, by means of the slit-lamp, is now proved in the living subject, as it had been already proved post mortem, to be due to the rupture of Descemet's membrane.—W. S. Duke-Elder writes on Changes in Refraction in Diabetes Mellitus. His principal conclusions are: (1) In diabetes sudden changes of refraction occur. In the course of the disease with high or increasing sugar, myopia tends to occur; with decreasing sugar, and therefore usually just after the onset of energetic treatment, hypermetropia tends to occur. (2) The phenomenon is due to osmotic processes involving the lens, caused by a variation of the molecular concentration of the blood and tissue fluids with the sugar-content. (3) In both cases the tendency is to recur to normal: in the first under general diabetic treatment; in the second on the establishment of metabolic stability.——In the May issue G. Riddoch and C. Goulden write on the Relationship between Subarachnoid and Intraocular Hæmorrhage. This is a reprint of a paper read before the Ophthalmological Section of the Royal Society of Medicine in June, 1924. About the same time Leslie Paton read a paper on the same subject to the Ophthalmological Society.[1] They should be read together. Appended to the present paper is a bibliography containing references to 67 previous writings on the subject, mostly by neurologists and ophthalmologists.—David Priestley Smith carries on the traditions of a well-known name in his article on Centripetal Fan Scotoma in Glaucoma. It includes charts of several cases of chronic glaucoma showing a scotoma tapering from the periphery of the field towards the fixation point, and not connected with—nor leading towards—Mariotte's blind spot. To discover these scotomata in early typical cases it is almost essential to use the circular method in perimetry. The borders of the area of maximum blindness are more radial than concentric, and, of course, the border is more accurately located when the test objects meet it at something like a right angle.—I. Abramovitz, of Vilna, records a case of such severe injury to the eye from liquid ammonia (10 per cent.) that it had ultimately to be eviscerated. The ammonia had been awkwardly administered during a fainting fit, and the liquid had flooded the eyes.

The Veterinary Journal for April is made up of 22 articles by various medical and veterinary authors on the subject of tuberculosis in all its phases. Articles on the Prophylaxis of Bovine Tuberculosis by Vaccination by Mr. Guérin, of the Pasteur Institute at Lille, and Dr. Nathan Raw, advance promising views. In neither case has trial lasted a sufficient time to speak of definite result, but the authors have made out an a priori case for further trial in dairy herds.—The Danger of Tuberculous Milk as a Risk to Man is dealt with by Dr. Stanley Griffiths, and the Eradication of Tuberculosis from the Milk-supply has a number of articles under the respective authorships of Colonel J. W. Brittlebank (Manchester), Dr. John Robertson (Birmingham), Dr. A. Stenhouse Williams (Reading), Prof. J. Lyle Cummins (Cardiff), Mr. Male, and others.—The Veterinary Inspection of Cattle for the Eradication of Cows with Tuberculous Udders is advocated by Messrs. Lloyd, Burndred, and Pollard, the municipal veterinary officers of Sheffield, Blackburn, and Halifax respectively, whilst the prevalence of the disease in the pig, dog, cat, guinea-pig, and rabbit receives mention from the pens of Messrs. Mayall and Gray, who are veterinary practitioners.—The views of Prof. Moussu, of the Paris (Alfort) Veterinary School, on Anti-tuberculosis Vaccination, as at the Present Time Applied in France, are given in an article translated from the *Recueil de Medecine Vétérinaire*, and other aspects of the question are dealt with in abstracts from current literature. The special number is worthy of perusal by all who are interested in public health work.

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[1] Trans. Oph. Soc., 1924, p. 110.

PROCEEDINGS OF THE ROYAL COMMISSION ON NATIONAL HEALTH INSURANCE.*

(Continued from p. 1098.)

EVIDENCE OF VARIOUS APPROVED SOCIETIES.

Prudential Society.

(App. XXI. and Q. 9627–9786.) Mr. R. J. Meller, M.P., and Mr. E. F. Spurgeon gave evidence, and said that they had not much to add to that of the National Conference of Industrial Assurance Approved Societies. The Prudential Approved Societies, four in number, have a total membership of over 3 millions. Interesting sickness experience tables show the actual as a percentage of the expected sickness for five years; for 1923 the figures were 93 per cent. for men and 83 per cent. for women. The witnesses were of opinion that there had not been a long enough normal period on which to base estimates for future rates.

They advocated giving insured women on marriage the option of (1) a cash bonus to terminate their insurance, or (2) a continuous insurance, with the ordinary "free year," &c., instead of the special benefits at present provided. Treatment benefits, in particular dental benefit, should, they thought, be rendered available for all insured persons, and should be financed through the existing Central Fund, the first charge on which should be, as at present, the meeting of societies' deficiencies. Such treatment benefits (e.g., dental benefit) should be minimum benefits and capable of being supplemented by societies having surpluses remaining after paying their contribution to the Central Fund. For this reason, amongst others, these treatment benefits should be administered by the Approved Societies and not by the Insurance Committees.

As regards the medical service now provided, Mr. Meller said :—

> I think the medical service is vastly improved from the earlier days, but I think it still falls far short of what medical service should be; not so much from the point of view of the incompetency of the practitioner, but from the point of view of the narrowness of the service which is given.

National Amalgamated Approved Society.

(App. XXV. and Q. 10390–10636.) The evidence of this Society (Sir Thomas Neill, Mr. Farmer, and Mr. Pike) was on somewhat similar lines to that of the Prudential. Membership, 2¼ millions. Investments, nearly £11,000,000. Sickness experience of men in 1923, 97 per cent. of expectation; of women members, 101 per cent. The disablement benefit of women has been no less than twice the expectation.

The Society drew special attention to the heavy burden on the funds due to tuberculosis, and suggested that the Commission should invite particulars from societies generally, and give publicity to the facts and so help to concentrate public opinion on the need for more closely tackling this disease and possibly for compulsory segregation. As regards "additional benefits," a substantial part of this Society's surplus had been devoted to contributions to the voluntary hospitals. Of the treatment benefits, dental treatment came easily first, and the Society is spending £90,000 per annum on it. Of every 100 applications now being received for the following treatment benefits the proportions in each case are :—

Dental	71
Optical	18
Convalescent home treatment	7
Medical and surgical appliances	4

With regard to medical benefit, the witnesses considered that Medical Service Subcommittees are satisfactory. In the refereeing of special benefit claims the procedure followed was to get a "Harley-street man" to select suitable cases for reference, and send them to the Regional Medical Officers of the Ministry.

United Women's Insurance Society.

(App. XXIV. and Q. 10171–10389.) Lady Emmott, Chairman, and Mr. Alban Gordon, Secretary, gave evidence. The Society has 51,000 members, two-thirds of whom are domestic servants and the remainder clerks, nurses, and shop assistants. Its sickness and maternity experience has been light, and the outstanding feature of the Society's administration was the early use made of Section 21 (subscriptions to a charitable organisation) for providing dental and other benefits to its members. A separate organisation was brought into being in 1914, called the United Women's Benevolent Association, for the purpose of providing these extra benefits.

The Society, in this way, has had ten years' experience of a dental scheme. Full details, scales of pay, &c., are given. The benefit includes all surgical dentistry free and half cost of dentures. It has been provided through a central clinic in London and a panel system in the provinces. The tables given show a total expenditure on dentistry of £41,000 and a consequential saving of sickness benefit and disablement benefit estimated at £14,000. It is considered that the gross total cost of an all-in scheme of dental benefit should not exceed 5*s.* 3*d.* per member per annum, of which a substantial portion could be recovered from the individual member.

It was agreed that schemes under the section referred to might properly be subject to more control by the Ministry of Health. In fact, if dental treatment were to be a benefit under the Act, it might suitably be administered by the Insurance Committees.

As to panel as opposed to clinic treatment the evidence contains the following :—

> With regard to administration through private dentists or panels of dentists, the great difficulty to be contended with is that caused by the practitioner who either states, or more generally implies, that the article which he will furnish under the panel scheme would be distinctly improved upon by the payment of a small supplement by the member. Even graver and more difficult to cope with is the tendency on the part of the less scrupulous practitioner to indulge in the more profitable work of extractions and provision of dentures rather than the more arduous but more beneficial conservative work which is generally recognised to be the better from the patient's point of view.

This Society considers that there should be a comprehensive medical service, and with regard to the present system of contributing to hospitals out of surpluses, it expressed profound dissatisfaction.

> Owing to the attitude adopted by the authorities of the majority of hospitals, such payments are a benefit to the hospital without being a benefit to the member, because the hospitals receiving such a payment from the Society do not accept this as being made on behalf of the member, but still require her to contribute the same sum that she would have contributed had the Society not made a payment on her behalf.

National Conference of Friendly Societies.

(App. XXVI. and Q. 10637–11027.) This evidence (Mr. J. W. Shaw, Mr. A. J. E. Saunders, and Mr. W. Marlow) covers similar ground to that already given by the large Friendly Society orders—a proposed limitation of cash benefits, the need for a scheme of dental treatment (with a possible limitation to one-half of the cost in the case of dentures), and general objection to the pooling of surpluses.

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* In previous articles the proceedings of the Commission were reported under the following headings: Introductory Note; The Scope of the Insurance Scheme (see THE LANCET, Jan. 31st, pp. 247–8); The Provision of Medical Benefit (Feb. 7th, pp. 301–3; Feb. 14th, pp. 355–6; Feb. 21st, pp. 403–5); Financial Provisions of the Act (Feb. 28th, pp. 454–7); Medical Certification and the Regional Medical Staff (March 7th, pp. 508–9); The Approved Societies and the Money Benefits (March 14th, pp. 564–5; March 21st, pp. 623–4); Evidence of the Hearts of Oak Society (March 28th, pp. 677–9); Evidence of the National Conference of Industrial Assurance Approved Societies and of the Manchester Unity Approved Society (April 4th, pp. 731–3); Evidence of Independent Order of Rechabites, of Rational Association Friendly Society, and of Miners' Societies (April 11th, pp. 784–6; April 18th, p. 839); Evidence of Mr. Alban Gordon (April 18th, pp. 839–40); Evidence of Joint Committee of Approved Societies, of Stock Exchange and Lloyds' Health Insurance Societies, and of Group of Catholic Approved Societies (April 25th, pp. 889–91); Evidence of the National Insurance Beneficent Society (May 2nd, pp. 943–4); Evidence of the British Medical Association (May 9th, pp. 993–5); Evidence of the British Dental Association and other Dental Organisations (May 16th, pp. 1044–6); Evidence of the Insurance Committees (May 23rd, pp. 1097–8).

References to the paragraphs in the printed statements issued as appendices to the reports of the oral evidence are given thus: "App. X. 69," and references to the oral evidence thus—Q. 1369.

As regards the medical service for the insured, it is pointed out that if there was a mere extension of the present service to dependants of insured persons, this would (*a*) greatly intensify the overlapping of services already existing; (*b*) be extremely costly, because a large number of panel practitioners would be, in effect, working full-time on payment basis devised for part-time work; (*c*) leave out of the scheme at least 1½ millions of persons, including not only the destitute, but a number of non-insured persons such as hawkers, small shopkeepers, and others.

It is therefore suggested that the best way of organising the provision of medical treatment is to merge all existing forms of public medical service (including medical benefit under the National Health Insurance Acts) into one National Medical Service, thereby creating one unified organisation for the prevention and cure of disease. It was realised that this was an ideal not capable of being immediately put into practice. The conference was of opinion that in the meantime consultant and specialist services should be provided for insured persons.

Other Societies' Evidence.

Other evidence given prior to the presentation of that submitted on behalf of the medical profession was as follows:—

Seamen's National Insurance Society (App. XXXI. and Q. 11906–12236).—Sir Norman Hill explained the exceptional needs of the sea service, and the special arrangements in force for attendances at the various ports by specially engaged doctors paid according to an agreed scale; the system has worked well and there has been no cause of complaint. He suggested a new method of collecting contributions in respect of foreign-going seamen, to stop the deplorable loss of contributions which was going on at present. Sir Norman Hill also gave evidence as to the Lascar fund which is fed by contributions in respect of foreign domiciled seamen; 600 pensions are offered each year out of the fund and grants are made also to seamen's hospitals.

National Federation of Rural Approved Societies (App. XXIX. and Q. 11393–11750) and the *Scottish Rural Workers' Approved Society* (App. XXX. and Q. 11700–11905).—The Federation's evidence contains some rather general criticisms of the doctors for failing to observe the certification rules, suggests that panel doctors are mostly overpaid and that the capitation fee should diminish on a scale after the number of insured persons on a doctor's list exceeds 500, and complains of the inadequacy of the reports of the Regional Medical Staff. The Scottish Society's evidence includes a proposal that complaints in regard to certification should be dealt with by the Scottish Board of Health direct instead of under the present cumbersome machinery.

National Federation of Employees' Approved Societies (App. XL. and Q. 13143–13441).—This Federation includes societies of the Employers' Provident Fund type. Mr. Lesser gave evidence. The Federation is opposed to any fundamental reconstruction of the national health insurance scheme such as administration on a territorial basis through local authorities; it does not consider that experience at present is sufficient to justify dental treatment as a normal statutory benefit. As regards the medical service under the Acts, it is stated that these societies have almost daily experience of the need for supplemental services, although some of the most necessitous cases can be relieved by referring members to institutions to which the societies contribute.

Royal Insurance Officials' Benevolent Association (App. XXVII. and Q. 11028–11201).—This Association would prefer to remain under the National Health Insurance Acts if the surpluses of the Society can be fully secured to its own members. At the present time, within a short period of a member qualifying for additional benefits, he ceases to be insurable and loses all title to share in the disposal of the surplus he has helped to build up.

MEDICINE AND THE LAW.

THE ABRAMS SYSTEM IN THE LAW COURTS.

THE High Court of New Zealand made an order in March last for removing from the Medical Register the name of Dr. Dundas Mackenzie, an exponent of the Abrams system of diagnosis and treatment. The hearing of the proceedings occupied nine days and attracted considerable attention. From newspaper reports now available it is at length possible to obtain a clear idea of the charge, the evidence, and the judgment in the case. As we have not yet had a test case in the law courts of this country, it is perhaps worth while to record what has happened elsewhere.

The charge of infamous conduct, which the High Court of New Zealand has held to be proved, was not based upon the mere use of the Abrams system. The Medical Board which initiated the proceedings did indeed suggest that no scientific foundation has yet been established for Dr. Abrams's claims; but the Board's contention was that, whether the system was genuinely valuable or not, this particular exponent had used it as a medium for perpetrating a fraud on the public. The specific charge was that he practised the system "in such a manner as to show that he could not honestly have believed that that method of treatment and diagnosis was a reliable and useful one in the case in which he employed it." The evidence in support of this allegation related to some 20 cases. It indicated that Dr. Mackenzie (who admitted in the witness-box that he had claimed to be a cancer specialist though he had had no special training to support the claim) had told patients not only that they had cancer, but that they had it in an aggravated form—and this without a shadow of justification. He repeatedly stated that his system would cure and that other treatment would fail. Conversely, Dr. Mackenzie had announced that a woman had no sign of the disease, though two well-known Auckland doctors had diagnosed cancer. Those doctors, he said, were butchers who should not be allowed to practise; the lady merely had some minor trouble which he could easily cure with about 30 treatments. At the end of the period he told her husband that she was cured. Soon after she was found to be in an advanced state of cancer; there was an operation, but she died a few days later. Interspersed amongst evidence of this tragic character there were ludicrous incidents of blood sample tests of lamb's and donkey's blood which had been sent to Dr. Mackenzie as human specimens and which elicited remarkable diagnostic results. Professional witnesses, if they displayed any scepticism towards the Abrams system, were confronted in cross-examination with enthusiastic views attributed to Sir James Barr and the more guarded opinions of Sir Thomas Horder were quoted. After a patient hearing the High Court came to the conclusion that only one inference was possible—namely, that Dr. Mackenzie had no honest belief in the usefulness and reliability of the system which he practised. In the words of the judgment delivered by Mr. Justice Herdman, if a practitioner leads the public to believe that a system in which he has no faith can detect disease and can be used to check or cure disease, then he is not acting honestly and in good faith, and his behaviour brings itself within the phrase "infamous conduct in a professional respect."

In fairness to Dr. Mackenzie it should be stated that evidence was tendered on his behalf to prove that his treatment had effected cures. But the Court observed that this evidence was not supported by the witnesses' former medical advisers, and added that there was no conclusive or convincing proof that cure or improvement was due to the Abrams treatment. In fairness, too, to the Abrams system itself, it must be repeated that the merits of the electronic theory and the oscilloclast were not the primary issue in the case. On the other hand, the one solid inference established by judicial inquiry in the proceedings in Dr. Mackenzie's case is the fact that the exponent who pressed the Abrams system upon the New Zealand public, and who practised it so extensively, did not really believe in it himself.

HARNETT *v.* BOND AND ADAM: JUDGMENT OF THE HOUSE OF LORDS.

THE House of Lords delivered considered judgments dismissing the appeal of Mr. W. S. Harnett against the decision of the Court of Appeal in his action against Dr. C. H. Bond and Dr. G. H. Adam arising out of the detention of the plaintiff at Malling Place, Kent, and elsewhere, and out of the course taken by Dr. Bond in causing his return to the licensed home kept by Dr. Adam, which he had left on probation.

The general outline of the case will be remembered. At the end of the trial before Mr. Justice Lush, the jury answered certain questions left to them by the judge, assessing damages against the two defendants jointly at £25,000. After argument Mr. Justice Lush entered judgment against the defendants jointly for £20,000, and in addition against Dr. Bond for £5000. The Court of Appeal directed that judgment should be entered for Dr. Adam and ordered a new trial in the case against Dr. Bond, and against this Mr. Harnett appealed to the House of Lords.

The Lord Chancellor, in giving judgment, gave an outline of the facts and referred to the questions answered by the jury:—

1. *Q.* Did Dr. Bond cause the plaintiff to be detained at the office until the attendants came for him?—*A.* Yes.

2. *Q.* Did he cause him to be sent back for the purpose only of his being examined by Dr. Adam or for the purpose of his being detained at Malling Place?—*A.* Being detained at Malling Place.

3. *Q.* Did Dr. Bond cause the plaintiff to be taken back?—*A.* Yes.

4. *Q.* Was the plaintiff of unsound mind on Dec. 11th, 1912?—*A.* No.

5. *Q.* Was he fit to be at large?—*A.* Yes.

6. *Q.* Was he dangerous to himself or others?—*A.* No.

7. *Q.* Did Dr. Bond honestly believe that the plaintiff was of unsound mind?—*A.* No.

8. *Q.* Or that he was not fit to be at large?—*A.* No.

9. *Q.* Or that he was dangerous to himself or others?—*A.* No.

10. *Q.* Did he believe that the plaintiff had escaped from his brother's charge? If so, was that his reason for having him sent back?—*A.* Yes.

11. *Q.* Did he take reasonable care to ascertain the true facts?—*A.* No.

12. *Q.* Did he honestly believe that Dr. Adam had retained a power of taking the plaintiff back during the 28 days in the leave of absence order?—*A.* Yes.

13. *Q.* Did Dr. Adam when he received the telephone message and sent the car honestly believe that the plaintiff on Dec. 11th was of unsound mind and unfit to be at large?—*A.* Yes.

14. *Q.* That it was in his interest that he should be taken back to Malling Place?—*A.* Yes.

15. Did he take reasonable care in acting as he did?—*A.* No.

16. *Q.* Did he make it known to the plaintiff that he was liable to be retaken if his mental condition required it?—*A.* No.

17. *Q.* Was the detention of the plaintiff at the Commissioners' offices the act of Dr. Bond alone or was it really the act of both the defendants?—*A.* Dr. Bond.

It was common ground, Lord Cave said, that Dr. Bond acted for the reason given in answer 10, and not on account of any belief as to Mr. Harnett's mental condition referred to in answers 7, 8, and 9. Mr. Justice Lush had directed the jury that they might assess damages upon the footing that the whole of the confinement of the plaintiff after his return to Malling Place was a direct consequence of the defendants' acts on Dec. 14th, 1912, and as a result had given judgment for £5000 damages against Dr. Bond, and for £20,000 against both defendants. The Lords Justices had held, however, that the chain of causation had been broken at innumerable points after the date mentioned, and also that Dr. Adam, under the terms of the leave of absence order given to Mr. Harnett, was entitled to retake him within 28 days, if in his honest opinion it was necessary, and that there was no evidence of want of reasonable care on his part.

As to the case against Dr. Bond, Lord Cave had no doubt that if the jury's finding as to Mr. Harnett's mental condition on Dec. 11th, 1912, was assumed to be correct, Dr. Bond had no right to cause Mr. Harnett to be detained at the Commissioners' offices pending the arrival of the motor-car sent by Dr. Adam to fetch him back, and on this assumption Dr. Bond was liable for damages for that detention. The damages, however, must be confined to the direct consequences of such an act. It appeared to him to be impossible to hold that the detention of Mr. Harnett by Dr. Bond was the direct cause not only of his being retaken and conveyed to Malling Place, but also of his being confined in that and other houses until October, 1921. Dr. Bond could not and did not direct or authorise Dr. Adam to retake Mr. Harnett, and with regard to that retaking, to his confinement at Malling Place, and to his detention in the other places, where he was confined, each of these occurrences was a *novus actus interveniens* which broke the chain of causation. Further, there were the various examinations of Mr. Harnett by the proper authorities during the nine years of his confinement. It might be a question at the new trial whether the direct consequences of Dr. Bond's action ceased when Mr. Harnett was handed over to the attendants who took him away, or later when he arrived at Malling Place or when he was examined there by Dr. Adam. In any case, the consequences could not extend, in his Lordship's view, beyond 7 P.M. on Dec. 11th, 1912. It had been argued that the damages of £5000 might be justified as having been given in respect of that period, but the finding was obviously coloured by the words of Mr. Justice Lush, who, in summing-up, referred to "the whole purpose for which he was detained." The whole matter, therefore, ought to receive fresh consideration by a jury.

With reference to the case against Dr. Adam, Lord Cave pointed out that though the pleadings charged him with conspiracy and false imprisonment, no direct question as to either of these charges was left to the jury. The charge of conspiracy, if not abandoned, was negatived by the jury's answers to questions 13 and 14. The answer to 17 negatived any complicity of Dr. Adam in the detention at the Commissioners' offices, and there was no finding of false imprisonment at Malling Place. Dr. Adam must have been held liable upon the answer to question 15, as not having taken reasonable care, but the pleadings did not allege want of reasonable care, and the question only arose on the defensive plea of Dr. Adam under Section 330 of the Lunacy Act. Dr. Adam was entitled on this ground alone to judgment, but his Lordship would also examine more closely the findings of the jury and the evidence.

Firstly, was there any ground for charging Dr. Adam with conspiring with Dr. Bond to detain Mr. Harnett at Malling Place or elsewhere? There was no evidence to support such a charge, and it was negatived by the finding of the jury. Secondly, as to false imprisonment—that is to say, retaking or detaining the plaintiff without proper authority. The medical officer was empowered by the leave of absence order to take back the patient "if his condition requires it," and this could not mean that he was to be retaken at the risk to the medical officer of having it found by a jury many years afterwards that the patient's mental condition was consistent with his remaining at large. Thirdly, there was the jury's finding as to want of reasonable care, on which stress had been laid. It had been said that the onus of proving reasonable care was on the defendant and that if he failed to prove it the retaking was void. This seemed to the Lord Chancellor to be fallacious. There might be a remedy if negligence were proved, but only by an action for negligence, not by an action for false imprisonment. He agreed, however, with the Court of Appeal in their view that there was no evidence of negligence to go to the jury and that Dr. Adam was entitled to judgment.

In conclusion, the Lord Chancellor said, public anxiety had arisen owing to the finding of the jury as to Mr. Harnett's long detention having been the result of what was done in December, 1912, when, according to the jury's view, he was sane. The full investigation of the case in the Court of Appeal and in the House of Lords had shown that no responsibility for that prolonged detention could be laid on Dr. Bond or Dr. Adam. The laws relating to lunacy provided for the protection of the public against the risk of unjustified detention, by providing precautions, and if these precautions were insufficient (but he did not say that they were), and if the lunacy laws needed alteration, that was no reason for visiting with vindictive penalties persons who had acted in good faith, and who were not responsible for any defect in the law.

Lord Dunedin and Lord Buckmaster delivered judgments to the same effect, and Lord Atkinson and Lord Sumner concurred.

As a result, Dr. Adam is to be congratulated upon the conclusion of litigation, prolonged most unfortunately for him by the conclusions arrived at in the trial before Mr. Justice Lush, and the case against Dr. Bond remains *sub judice*.

THE LAW RELATING TO CORONERS.

THE Lord Chancellor has made a welcome announcement with reference to coroners' inquests in answer to a question by Lord Darling in the House of Lords. He said that the Government proposes to introduce a Bill dealing with them in general as well as with the question raised by Lord Darling, which related to the inconvenience arising out of inquests held simultaneously with proceedings before magistrates for murder or manslaughter. This is a matter which principally concerns those charged with the administration of justice, but it would also be an advantage to busy medical men who have to give evidence not to be obliged to repeat it more often than is necessary. The desirability of substituting a new Act of Parliament for the Coroners Act of 1887 has been pointed out repeatedly in our columns. Many improvements in the law have been suggested since the Act referred to came into force. Presumably, for example, power will be given to a coroner to order a post-mortem examination in doubtful cases before deciding that an inquest should be held, and probably the system of giving certificates of the cause of death by medical men who have not seen the body will be altered. It must not be forgotten that not only was the present statute passed nearly 40 years ago, but that a departmental committee took evidence on the subject and made recommendations in 1909–10. That committee, among other matters, inquired closely into the question of inquests following deaths under anæsthetics, when the late Sir Frederic Hewitt suggested the desirability of appointing in all such cases an expert as assessor to the coroner in order that the cause of death might be determined with precision. Some special consideration of the questions arising after deaths under anæsthetics may be expected. The Chancellor, we are glad to observe, said that the Bill is now ready, and that the Government hope to introduce it before long.

BECKETT-OVERY *v.* VAUGHAN: A SETTLEMENT.

IN this case, the hearing of which in the Chancery Division extended over five days in last March, Dr. H. Beckett-Overy sought to have his partnership with Dr. J. C. F. D. Vaughan dissolved upon grounds which included allegations as to the equipment of Dr. Vaughan for the practice in which they were engaged, and as to his conduct with regard to it, the partners having ceased to be on speaking terms. After much evidence on both sides had been given Mr. Justice Eve held that the charges put forward by the plaintiff in support of his claim for a dissolution, and denied by the defendant, had not been proved by the former; he dismissed the action, adding that nothing had transpired or was involved in his judgment that ought to affect the mind of any patient of either of the parties. Against this judgment an appeal was entered by Dr. Beckett-Overy, but when it came on for hearing Mr. Clauson, K.C., counsel on behalf of the appellant, announced that a settlement had been arrived at and asked that the appeal should be dismissed on the terms agreed. These were stated by Sir Malcolm Macnaghten, K.C., who said that his client had contested the action because he felt that there were no grounds upon which dissolution could be claimed against him. He was, however, satisfied that a dissolution should take place, and the terms arrived at accordingly were that the partnership should stand dissolved as from that date with an acknowledgment that there were no grounds on which it could be dissolved otherwise than by agreement; that Dr. Beckett-Overy should give an indemnity against the costs of the action and of the appeal; that he should repay to Dr. Vaughan the sum of £2000 paid by him for his share in the partnership, and should also pay to Dr. Vaughan £500 per annum for the next three years. The Master of the Rolls signified the assent of the Court to the settlement as stated and the appeal was dismissed accordingly. The parties are to be congratulated upon having arrived at a conclusion which saved them both from all further ventilation of their differences in public, and the successful defendant upon a result which has vindicated the position of resistance which he took up.

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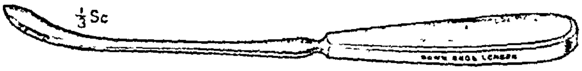

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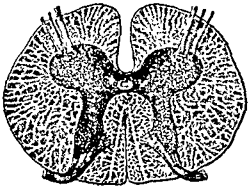

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THE LANCET.

LONDON: SATURDAY, MAY 30, 1925.

RECIPROCITY OF MEDICAL PRACTICE.

THE 121st session of the General Medical Council opened on Tuesday last with the delivery of Sir DONALD MACALISTER'S presidential address. This will be found substantially in another column, and brief though it is, it presents for our consideration several quite important questions, to one of which attention should be called—namely, international reciprocity in medical practice. It has always been the ideal and policy of the General Medical Council to promote reciprocity between this country, our Overseas Dominions, and foreign nations, on the simple assumptions that the good doctor deserves recognition as such in whatever country he may elect to carry on his calling, and that geographical delimitations are at variance with the whole spirit and conduct of medical practice. But although these assumptions are true, and although it is true also that the human make-up is, to speak generally, all the world over similar, and subject to attacks all the world over which have to be repelled by analogous methods or prevented by comparable measures, still a complete free trade in medicine has not been possible, if only because the standards of the different countries cannot lead to similar methods of training. The younger nations, whether speaking literally or in regard to scientific development, have not had the opportunity of educating their followers of medicine in the same way as those nations whose development has reached higher planes; any of these nations may produce a discoverer or a pioneer, but reciprocity connotes a general or average standard among all those who practise, and cannot be established as an international routine in recognition of distinguished individual cases. There are great countries, notably the United States of America and our own Dominion of Canada, where even within their own borders the varying standards have rendered complete reciprocity difficult for the time, but scientific progress in these countries has during the last half century been so rapid that this situation must soon cease to exist. There are again countries where certain votaries of medicine have received their traditions and instructions upon principles that do not accord with what Western medicine holds to be essential, and this situation renders impossible any compact of an international character by which the practitioner along peculiarly racial lines could be bound by the general tenets. In India, however, movements have recently taken place which will tend to make it easier for the graduates of all their universities to register their degrees in the appropriate list, and Sir DONALD MACALISTER was able to tell the Council of other important directions for the establishment of medical reciprocity. Our relations in this direction with Italy were interrupted recently and to the great regret of medicine, for the generous understanding between Great Britain and Italy was of long standing. An intimation has, however, been received within this week to the effect that British and Italian medical men desiring to practise in each other's countries will again obtain the necessary facilities. In Ireland the Free State legislature has made the position for medical practitioners in Southern Ireland, for a period of one year more, at any rate, comparable to that which they would enjoy in England, as regulated by the Medical Acts. Jersey and Guernsey have brought their law into harmony with ours by a new Medical Act.

So far so good. What remains to be accomplished before anything like such international coöperation of medical effort as medical science desires and deserves can be reached is very great, but so is the growing spirit to obtain it. The part being played by medicine in the activities of the League of Nations is so practical and so beneficent that the value of international understanding upon medical questions, and of combined effort to take remedial or preventive measures, as inspired by collective wisdom, grows daily apparent. The direct route to such understanding is reciprocity of practice.

NEW ANÆSTHETICS.

THE ideal anæsthetic is still to seek. It is good, therefore, to know that there are scientific men eagerly seeking it, and the account of work in connexion with anæsthetic agents not yet widely used, which we publish on page 1126, will be of interest to all our readers. The Combined Committee set up by the Medical Research Council and the Section of Anæsthetics of the Royal Society of Medicine has sat now for a year or so, and we have reason to hope that besides the valuable work on comparatively unknown agents to which we refer above, its labours will prove fruitful also as regards the standardisation and purity of some of the more familiar anæsthetic drugs. For it is not injudicious to suspect that even to-day we may not be getting from the anæsthetics with which we are already familiar the best result that they can possibly achieve. It may be that future improvement will lie not in the substitution of other agents for nitrous oxide and for ether, but in the discovery of methods and measures by which the use of these two faithful servants may be purged of the defects which alone rob them of perfection. These are, of course, comparative impotence in the case of the former and after-effects in the case of the latter. If ether were never followed by bronchitis or sickness, and "gas" alone could always produce relaxation, we should hardly need another anæsthetic. The anæsthetics with which Dr. SHIPWAY and Prof. PEMBREY deal in their report suffer from the primary disadvantage of being gaseous. Anæsthetics which are gases at ordinary temperature and pressure are, of course, as is familiar in the case of nitrous oxide, inconvenient as regards portability and general handling. It is only the paramount excellence of "gas" in certain directions that compensates for its inconvenience and keeps it in many instances the anæsthetic of election. It does not appear that either acetylene or ethylene provides advantages over nitrous oxide that will compensate for their possession of the same defect of inconvenience. Both these gases suffer the additional disadvantages of smell and of easy inflammability. It is true that in this latter respect they are not much worse than ether, for ether, too, cannot be used near an open flame or in contact with the actual cautery. But acetylene and ethylene are rather more easily explosive than ether apart from ignition by flame, and one or two accidents that have occurred in practice show the need for extreme care when these gases are employed in conjunction with nitrous oxide. The practical question of cost is likely also to militate against wide popularity for ethylene. In many respects, however, this gas appears to a highly satisfactory anæsthetic, and it is to be hoped that the efforts of the Committee will result in bringing ethylene within easy reach of the anæsthetist. At present, except in small quantities, it can hardly be obtained unless from America. The large percentages of oxygen which it is found possible and desirable to use in conjunction with ethylene show its potency as an anæsthetic agent. It is interesting in this connexion to recall the importance attributed to small quantities of ethylene as an impurity in ether by those, as we believe mistaken, authorities who declare pure ether to be devoid of anæsthetic power. Propylene has so far been submitted to so little trial that no pronouncement can yet be made on its merits or defects. Nevertheless, it is obviously worthy of further research, and to that we have no doubt it will be submitted.

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ATROPHIC RHINITIS.

The causation of atrophic rhinitis, or true ozæna, still remains a matter of uncertainty and speculation. In this country the view most widely accepted is that it is the mechanical result of past inflammation which has resulted in atrophy of the mucosa, destruction of the ciliated epithelium, and degeneration of the mucous glands; the secretion consequently tends to stagnate and to dry into crusts which, by harbouring putrefactive organisms, give rise to the characteristic offensive odour. The disease is, therefore, incurable, though the worst symptoms can be ameliorated by keeping the nares free from crusts, and this view of the condition is corroborated by the ordinary results of treatment. On this theory the multitude of micro-organisms found in the nose are not the cause of the disease, but play a secondary rôle by setting up putrefaction and causing the stench. Of the numerous organisms which have been isolated from cases of ozæna several have been claimed as the specific cause, amongst others the *Bacillus mucosus* described by Löwenberg in 1894, the Klebs-Löffler and the pseudo-diphtheria bacillus, and Friedländer's bacillus, but none of these have been shown to be the true causative organism. In 1899 Perez isolated a small polymorphic cocco-bacillus from a case of ozæna, called by him the *Cocco-bacillus fœtidus ozænæ*, which had the peculiarity that its cultures in broth constantly gave an intense sweetish odour like that of ozæna; furthermore, intravenous injection of a pure culture in puppies caused suppurative inflammation of the nasal mucosa with progressive disappearance of the bony structure, especially of the so-called anterior *turbinal*, while the bacillus could always be cultivated from the nasal secretion of the inoculated animals. Perez also found his organism in the nares of healthy dogs, and gave his opinion that atrophic rhinitis is an infectious disease communicable from man to man, and also that dogs are capable of infecting human beings.

The investigations of Perez have not, however, been very generally accepted, and many workers on these lines have failed to corroborate his experiments. Dr. Gustav Hofer took up the investigation in 1913; as he did not succeed in obtaining a pure culture of Perez's cocco-bacillus by cultural methods, he inoculated the mixed culture intravenously into a dog and obtained a pure culture of the organism from the resulting nasal discharge. With this he corroborated Perez's results, and further found that injection of a sterile filtrate obtained from the cultures produced the characteristic intranasal reactions. Since that time he has been a consistent advocate of the theory that the cocco-bacillus of Perez is the causative agent of atrophic rhinitis, and he has recently again published a full account of his views.[1] He finds further that the serum of 60 out of 100 typical ozæna patients gave an agglutination reaction with Perez's bacillus, although in some the organism could not be cultivated from the nose, and that no such reaction could be obtained in 40 patients without ozæna. For the last ten years he has treated ozæna by inoculations with Perez's bacillus; he naturally premises that a cure cannot be expected in advanced cases with marked degeneration of the mucosa, and does not inoculate those with advanced atrophy. Of the remaining cases he claims 8 to 10 per cent. of complete cures, 15 to 20 per cent. are refractory, and the rest are greatly improved; 15 to 45 weekly injections are required. He does not give details of the doses, nor of the age of the patients treated. Dr. Hofer writes with conviction, and a perusal of his article suggests that the subject might with advantage be investigated again in this country from his point of view.

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THE AMERICAN MEDICAL VISIT.

A visit to Europe on the part of 300 medical men from different parts of America will be the occasion of important scientific and social gatherings in London next week. The house of the Medical Society of London (11, Chandos-street, Cavendish-square, London, W. 1) has been placed at the disposal of the committee responsible for the arrangements, as a bureau and headquarters, and an attractive programme has been arranged. The Duke of York will welcome the guests at the Wigmore Hall, Wigmore-street, on June 2nd at 9.30 A.M., and short lectures will follow by Sir Humphry Rolleston, Sir W. Arbuthnot Lane, Sir Thomas Horder, and Dr. A. F. Hurst, the first-named acting as chairman of the session. On the morning of June 3rd, under the chairmanship of Sir John Bland-Sutton, Prof. Hugh MacLean, Mr. A. J. Walton, Colonel L. W. Harrison, Mr. W. E. Miles, Mr. T. P. Dunhill, and Dr. Strickland Goodall will give short lectures; on June 4th Dr. Gordon Holmes, Sir Walter Fletcher, Mr. James Sherren, Sir StClair Thomson, and Dr. H. C. Cameron will speak on subjects on which they are recognised as experts, while Lord Dawson of Penn will give the final lecture entitled the Speed of Life and Disease. Each lecture is timed to last for half an hour only. In the afternoons visits will be paid by small parties of 20 or 30 to various general and special hospitals where detailed programmes have been planned. The social arrangements include an evening party at the Royal Society of Medicine on June 3rd and a reception on June 5th at the Royal College of Surgeons, where, at 4 P.M., Sir John Bland-Sutton will give a short lecture on the Psychology of Animals Swallowed Alive. Various other functions are being held at the invitation of institutions and of private individuals, while the banquet at the Guildhall on June 5th, at which Dr. C. H. Mayo will preside, is likely to be a brilliant affair.

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[1] Seuchenbekämpfung, 1925, No. 3–4, p. 106.

Annotations.

"Ne quid nimis."

THE PENSIONABLE AGE.

In his speech in the House of Commons last week on the second reading of the Contributory Pensions Bill, Dr. F. E. Fremantle raised the question of the right pensionable age from the public health standpoint. To pension rigidly at 65 seems to him to be wasting money; not only so, but it means permanently throwing out of work at the age of 65 people who would be the better for working longer. The steady improvement of recent years in public health has not merely extended age as such, it has extended working age, and Dr. Fremantle sees a future in which people will live to 90, if not to 100 and 150 years of age. Whatever may be the accuracy of this prevision, it seems to be accepted by medical statisticians that, should the birth-rate continue to diminish and ultimately to approach the death-rate, there will be a much larger proportion of elderly people in the country in proportion to the working population. Many years ago Prof. Raymond Pearl remarked that a stationary population, one in which the birth-rate and death-rate balance, is necessarily a population with a relative excess of persons in the higher age-groups, and it hardly needs a great statistician to make the point. This state of affairs is likely to have important social consequences, inasmuch as we do not know if the upkeep of these elderly non-workers can be properly maintained out of the fruits of the workers' toil, whether immediately or by way of contributory pension. Dr. Fremantle would not be guided in his pensioning by the "crude mechanical age" of 65, or any other age, but would institute a test of disability to be decided by a medical board diluted with such other elements as may be required to constitute a professional technical board.

The practice of fixing a definite age at which pensions should commence appears to be general in Europe. Denmark, in a scheme of outdoor relief framed in 1891, put the pensionable age at 60 years. In Belgium and France it is 65, and in Italy a system of voluntary contributory insurance subsidised by the State provides annuities at the age of 60, when dues have been paid for the preceding 25 years. America is apparently the only country which has not adopted some form of old-age relief and has not fixed a pensionable age. The question has been studied in the light of the influence of prolonged physical activity upon the health of the manual worker. Pearl in his "Biology of Death" went so far as to suggest that the duration of life of an animal stands in inverse relation to the total amount of its metabolic activity, or, put in other words, to the work (in the sense of theoretical mechanics) that it, as a machine, does during its life. E. A. Ross, in a study of treadmill and carrying coolies, gave a very practical example of the shortening of life by exertion, and the unfortunate relationship between hard work and duration of life, shown in such extreme cases, holds in lesser degree after middle age for nearly every walk of life. Before the age of 40, according to E. L. Collis and M. Greenwood,[1] it seems to make little difference in the rate of mortality whether the occupation involves light or heavy physical labour. After 45 years of age a man shortens his life by definite amounts in proportion as he performs physically heavy labour. In the case, therefore, of lives spent in severe muscular exercise the limitation of work by a strict age-limit has a sound statistical basis. Only in occupations of a less arduous character would the postponement of the pensionable age fairly come up for consideration.

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[1] The Health of the Industrial Worker. London. 1921.

TINTED GLASSES.

It is to be feared that tinted glasses or Crookes glasses are too often prescribed without the prescriber having any very clear idea of the exact effects which the quality of glass is calculated to have on the eyes of the patient. For this reason we welcome the publication of Sir Arnold Lawson's presidential address delivered before the Section of Ophthalmology of the Royal Society of Medicine,[1] and which we reported at the time.[2] In the first place, there is a great deal of popular misconception on the subject of ultra-violet rays. The visible spectrum extends roughly from waves of light of 700 μμ wave-length at the red end to 400 μμ wave-length at the violet end, or in some people to 380 μμ. When we come to rays of shorter wave-length, some of them are capable of chemical action which, if it were possible for them to penetrate to the retina of the eye, might be harmful to it. In the normal eye, however, it is impossible for any ultra-violet rays except those between 400 μμ and 350 μμ to penetrate so far. The cornea absorbs all waves of shorter wave-length than about 290 μμ and the crystalline lens all up to 350 μμ. Moreover, ordinary untinted glass itself is impervious to ultra-violet rays, so that in the case of wearers of spectacles they are doubly protected, and although ordinary sunlight contains ultra-violet rays as short as about 350 μμ it stands to reason that these cannot be harmful to the normal eye. It is erroneous, too, to suppose that electric incandescent lamps are stronger in ultra-violet radiation than ordinary sunlight, so that from this point of view we may say that the danger of ultra-violet radiation in the eye in ordinary life is nil. With regard to the luminous and infra-red rays, on the other hand, the case is different. The eye does not appear to possess any sufficient natural protection against an excess of these, beyond what is present in the sunlight that we ordinarily encounter, and when to excess of sunlight is added glare—the reflection from a snowfield, for instance, which, it is estimated, may be as much as 70 per cent. of the incident light, striking the eye in an unaccustomed and therefore distressing manner—the effect is such that artificial protection is called for, even for normal eyes.

What sort of protecting glasses should be prescribed? There is an interesting chart of absorption curves of various sorts of protecting glass published with Sir Arnold Lawson's paper. From this it appears that the glass which gives by far the most efficient protection against infra-red rays is that known as peacock blue, and in the opinion of Sir Arnold Lawson this is the best glass to prescribe in all cases of inflammatory disease of the retina or choroid. The colour effect of these glasses, however, is so inconvenient to the patient with healthy eyes that their use is obviously restricted. There remains the choice between different sorts of tinted glass—London smoked, amber, Fieuzal, and Crookes glass, all of various shades. From the medical point of view there is not much to choose, but Crookes A or A2 glass has this superiority, that it affords a general shade without materially disfiguring the appearance or altering colour values. They cut off all the ultra-violet rays of a shorter wave-length than 350 μμ and their use would seem to be indicated after cataract extraction, when the protection to the retina afforded by the lens no longer exists. For normal eyes, after illness or in states of lowered health, where photophobia is a symptom, Fieuzal or Crookes smoked (B or B2) glass is sometimes appreciated by the patient, but to wear tinted glasses in normal conditions is a habit not to be encouraged. In cases of neurasthenia many patients claim to have derived great benefit from the wearing of Crookes untinted glasses, but how far the element of suggestion comes in may be considered doubtful. To avert snow-blindness in the Alps London smoked, amber, or green glasses seem to be the favourite. It is said that in Shackleton's South Pole expedition even the horses had amber-tinted glasses constructed for them. A point which is apt to be overlooked, and on which Sir Arnold Lawson laid stress, is that the amount of protection afforded by any glass depends not only on its tint and composition, but also upon its thickness. When concave glasses are worn the effect must be correspondingly smaller than with a plane glass.

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[1] British Journal of Ophthalmology, March, 1925, and Proceedings of the Royal Society of Medicine, Section of Ophthalmology, April, 1925.

[2] THE LANCET, 1924, ii., 801.

THE BILHARZ CENTENARY.

IN the year 1825 Theodor Bilharz was born of well-educated parents, at Sigmaringen, where his brother, A. Bilharz, a distinguished philosopher, still lives at the age of 85. As a boy Theodor had a great love of nature, and this taste was encouraged by his studies under the naturalist, Siebold. Becoming a doctor, he gave up his post of prosector at Freiburg, in Baden, when Griesinger, who had been appointed physician to the Viceroy of Egypt, invited him to come with him as his assistant in 1850. Siebold had taught him to take interest in helminthology, and in 1851 Bilharz made his first report on *Distomum hæmatobium*, the curious trematode whose males carried the females about in their gynæcophoric canals. In 1852 he declared it to be the cause of cystitis, vesical polypi, and probably of stone. In 1856 Meckel expressed the opinion that the new trematode did not belong to the genus *Distomum*, and suggested the name *Billharzia* (the mis-spelling of the author's name being no doubt unintentional): Weinland it was who, in 1858, called it *Schistosomum*. In 1852, Bilharz along with Siebold drew attention to the importance of *Ankylostoma duodenale* in the causation of anæmia, and later made researches on guinea-worm, but thereafter he devoted himself to investigations of the electrical organs of Nile fishes, and to ethnological examinations of Egyptian skulls. He contracted typhoid at Massowah, and died in Cairo in 1862. His biographer, Dr. E. Senn, describes[1] Bilharz as devoted to his friends, and unselfishly assisting all who needed his help. His importance as a pioneer in the investigation of tropical medicine is known to all.

VARIATION OF BACTERIA.

IT is now a familiar fact that from ordinary "pure" cultures of bacteria a number of strains may be separated which differ from one another in their fermentative capacities, their mode of growth, their virulence, their serological reactions, and in their other properties which are used as identifiable characteristics. The phenomena are of great interest. In the first place, the unique rapidity of multiplication of bacteria makes them material of exceptional importance in the general biological study of variation and evolution; and in the second place a proper knowledge of their possibilities in these directions lies at the bottom of an understanding of many of the larger problems of epidemiology. In two papers in the last number of the *Journal of Experimental Medicine* (vol. xli., pp. 587 and 619) Dr. H. A. Reimann of the Rockefeller Institute and Dr. H. L. Amoss of Baltimore describe observations made with type I. pneumococci. Dr. Amoss worked with a culture which had been stabilised by being passed through 189 mice; individual colonies from plate cultures showed no significant variation in virulence, nor did seven strains isolated by culture of single cocci. But if this culture was grown under somewhat unfavourable conditions—in immune serum, in dilute bile, or in somewhat acid broth—avirulent strains, mixed with normally virulent organisms, were easily obtained which differed in mode of growth and reaction to bile-solubility as well as in their action on mice. The difficulty in the interpretation of such observations has generally been that it cannot be known whether the new form was present in minimal numbers in the original culture and has become manifest only in an environment which is relatively favourable to it or whether something really fresh has arisen. Dr. Amoss can, however, give at least a partial answer to this fundamental question, for using cultures derived from the original population by the isolation of single diplococci he shows that by growth in diluted antiserum avirulent strains may be obtained which are apparently identical with those got from the ordinary culture with which he started. It seems clear therefore in this case that the avirulent strain was a new mutation and not merely an unmasked component of an originally mixed population. His attempts to reproduce a virulent strain again were unsuccessful; continued growth on favourable media and passage through mice left the avirulent strain as it was. The results throw no great light on the troublesome hygienic question whether any practical importance should be attached to, e.g., avirulent diphtheria bacilli, though as far as they go they are compatible with the sanitary experience that such brands of organisms do not matter very much. Dr. Reimann's observations gave essentially the same results; single virulent diplococci can originate avirulent strains which have never been found to revert and which to a large extent have lost their type specificity; their part in the world's economy remains to be discovered.

DRAINAGE OF THE GALL-BLADDER.

IT still appears to be an unsettled question among surgeons as to whether the gall-bladder should be removed or left in situ and drained when it is found to be inflamed at operation. Dr. Thomas S. Cullen, of the Johns Hopkins Hospital, is in the almost unique position of being able to approach the subject as a patient, for he had his gall-bladder first drained and then removed some years later, and as a surgeon who has drained the gall-bladder in nearly 300 cases. An account of the end-results of these operations by Dr. H. L. Darner forms one of the most interesting papers in the third volume of reprints recently published by Dr. Cullen.[1] Of the 290 patients who have been thus treated, in 17 the gall-bladder was gangrenous, in 104 acutely inflamed, and in 144 relatively quiescent at the time of operation, while in the remaining 25 the gall-bladder was found to be diseased when the abdomen had been opened for some other reason. When the gall-bladder was very large a portion of it was removed, but otherwise Dr. Cullen contented himself with introducing a drainage-tube accurately held in position by sutures passing through the gall-bladder wall and the rubber tube, and by additional purse-string sutures. Two "cigarette" drains were then placed just below the gall-bladder, one of which drains was removed on the first and the other on the third day, while the main drainage-tube usually came away between the tenth and the thirteenth day after operation. The abdominal wound was usually found to be healed at the end of the third or fourth week. The immediate death-rate was 10 per cent., but this was unduly high on account of the inclusion of some 17 cases in which the pre-operative condition of the patients made the result almost hopeless from the start. In following up the cases which recovered, Dr. Darner was able to obtain information about all but 14. Of the remainder, 19 were unimproved, 20 were improved but had some symptoms, while 202 had no gall-bladder symptoms at all after operation and were either alive and well or, as in the case of 34 patients, death had resulted from some other cause. Since the total number of cases was spread out over a period of 25 years, this number of deaths from other causes cannot be regarded as excessive. The paper contains a summary of nearly all the cases on which these statistics are based, and while the facts are thus fully presented, Dr. Darner has refrained from drawing any deductions other than a brief note in which he summarises the prevailing conclusions. Dr. Cullen himself admits that the question is by no means settled and he pleads for further reports as to the end-results in gall-bladder cases. A follow-up investigation of a large number of cases treated by cholecystectomy would form an interesting comparison with this exceedingly instructive paper.

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[1] Archiv für Schiffs- u. Tropen-Hygiene, April, 1925.

[1] Reprinted from Surgery, Gynecology and Obstetrics, November, 1923.

LIVER EXTRACT IN HIGH BLOOD PRESSURE.

AN announcement was made at the recent annual meeting of the Ontario Medical Society to the effect that injections of a liver extract will reduce the high blood pressure of arterial disease. As yet no complete account of this work has appeared in the scientific literature, but it will be interesting to review the established scientific researches tending to support such an hypothesis. In the first place, it is a matter of common knowledge that extracts of tissues are practically always depressor in action. The effect, however, only lasts for a short time. The idea of associating the liver with chronic hypertension is by no means original. A group of investigators, about 15 years ago, paid special attention to the pharmacological properties of amines, and to their destruction in the liver. It was found that many of the amines derived from amino-acids were strongly pressor in action. Thus isobutylamine, isoamylamine and *p*-hydroxy-phenyl-ethylamine are capable of raising the blood pressure on injection (Dale and Dixon,[1] Barger and Dale[2]). It had previously been shown that these bodies could be produced from amino-acids by the action of the intestinal bacteria. The pressor effects of such amines, together with their possible production in the intestines, suggested a new cause for chronic hypertension. Thus Harvey[3] produced chronic renal and vascular sclerosis by feeding rabbits with *p*-hydroxy-phenyl-ethylamine. Clark[4] found that the oral administration of this body raised the blood pressure in man. In 1910 Ewins and Laidlaw[5] demonstrated that these amines, when perfused through a surviving liver, were detoxicated, and were converted into the corresponding oxy fatty acid derivative. Oehme,[6] in 1913, indirectly confirmed this work by proving that much larger doses of these bodies were required to kill an animal when injected into the portal vein than when the amine was administered by injection into the systemic circulation. It would appear, therefore, that the liver can detoxicate pressor bases, and the results of the further investigation promised by the University of Toronto will be awaited with interest.

WEIGHT-LIFTING.

CONTROL of weight-lifting in industry has long been a vexed question for enforcement under existing powers. Instances have again and again been quoted by inspectors of juveniles struggling with burdens weighing more than themselves; but a standard of what is reasonable, or rather not injurious, to lift has been hard to determine and harder still to present in evidence during prosecutions. The Home Office have, however, just issued draft regulations to apply to lifting heavy weights in the woollen and worsted textile industries. This draft is notable not merely as an effort to solve a difficult problem, but on account of the part played by the industries concerned. The standards adopted are those recommended to the Home Office after investigations carried out by the National Wool (and Allied) Textile Industrial Council; hence the proposed regulations represent an instance of an industry coming forward and desiring to have its practice controlled by statute. This procedure is in itself a matter of some moment. The scale of weights is here shown together with the approximate weights of those to whom it will apply:—

Person.	Maximum weight permissible to lift if body be—		Approx. mean weight of person.
	Compact or rigid.	Not reasonably compact or rigid.	
	lb.	lb.	lb.
Male	150	120	150
Female aged 18 and over	65	50	120
Male aged over 16 and under 18	65	50	125
Female aged under 18 ..	50	40	99
Male aged under 16 ..	50	40	90

If weight be any criterion of power the adult male is worst off; moreover, as he grows older he is more prone to develop hernia from weight-lifting. For the rest about half the body-weight seems to be the standard chosen if the weight to be lifted be rigid, but here the juveniles are not quite so well off, since they may lift over half their weight. Probably what is practicable, without undue interference with custom, has influenced the weights chosen, which of course represent the maximum permissible to lift and not what must be lifted. This scale, when accepted, will have administrative value, and, if it finally hastens the introduction of mechanical weight-lifting appliances, it will do good.

IN MEMORY OF SAUGMAN.

ON March 1st, 1925, Vejlefjord Sanatorium celebrated its twenty-fifth anniversary, and the occasion was marked by the publication of a collection of papers,[1] written by several of Prof. Saugman's former assistants. Half a score of these papers are of a scientific character, and they contribute not a little to the modern literature of tuberculosis. But the paper which will be read with the greatest interest by those who had the privilege of knowing Saugman is the "Appreciation," written by Dr. J. Ostenfeld, who was Saugman's chief assistant in the period 1902–1907. Here is one of the intimate touches with which Dr. Ostenfeld introduces us to the inner life at Vejlefjord:

> "It was the custom at Vejlefjord Sanatorium for the physicians to circulate different magazines among themselves, and it was the rule that the one who first got a magazine was to underline anything of special interest. It fell to my lot to get the particular number of the *Deutsche Medizinische Wochenschrift* with Forlanini's article in it, and I clearly remember how one evening I handed it over to Saugman. The next day when Saugman, as usual, joined the morning round at 7 o'clock he had been greatly impressed, and declared that now the question raised by Forlanini approached its solution."

From this date (1906) onwards Saugman contributed more than anybody else to the evolution of lung collapse treatment, and at the time of his death in February last as many as 616 had been selected for this treatment at Vejlefjord. Saugman soon found that the benefits of thoracoplastic operations were jeopardised when they were undertaken away from the hygienic influences of a sanatorium, and ultimately he decided to master the technique of chest surgery so that he could give his patients the combined benefit of surgical and sanatorium treatment. As a student he had had a penchant for surgery, but it was not till after he had turned 50 that he took up surgery seriously. But he became a very skilled surgeon, and

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[1] Dale, H. H., and Dixon, W. E.: Jour. Physiol., 1909, xxxix., 25.
[2] Barger, G., and Dale, H. H.: Jour. Physiol., 1910, xli., 19.
[3] Harvey, W. H.: Jour. Path., 1911, xvi., 95.
[4] Clark, A.: Biochem. Jour., 1910, v., 236.
[5] Ewins, A. J., and Laidlaw, P. P.: Jour. Physiol., 1910, xli., 78.
[6] Oehme, C.: Arch. Exp. Path. u. Pharm., 1913, lxxii., 76.

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[1] Chr. Saugman, 1864–1923. Vejlefjord Sanatorium, 1900–1925. London: John Bale, Sons and Danielsson. Pp. 120. 7s. 6d.

personally operated on 91 patients. It would, perhaps, be idle to speculate what the fate of many of these patients would have been had it been necessary for them to leave the sanatorium, travel many miles, and submit to the discomforts of a thoracoplastic operation performed by a stranger in a surgical nursing home in a large town. Dr. Ostenfeld's sketch of Saugman's character portrays him as a man of strong contrasts. "His self-reliability and his humility constantly changed like storm and calm, yet so that his humility (he was always a professing Christian) was more and more apparent the older he became." He was an optimist and, as far as his optimism with regard to the character of others was concerned, he did not show great psychological insight. But his clinical optimism was unbiased and discriminating, and "his glance was penetrating in clinical matters." His commentator adds that: "His brilliant intellect was accompanied by an ingenuousness which somtimes expressed itself in quite a childlike way." But is there anyone of brilliant intellect who is not in some respects childlike?

MILK FEVER.

MILK fever or "post-partum paresis" in cows is one of those conditions which illustrate the point that the discovery of a successful empirical treatment may mislead or, worse still, kill real scientific interest in the ætiology of the disease. In 1897 Schmidt discovered that intra-mammary injection of potassium iodide was effective in curing milk fever. On the new treatment the mortality fell from about 50 per cent. to 20 per cent. and even less. Further investigation showed that the injection of many different fluids produced good results, and now mere intra-mammary insufflation is employed. There have been many hypotheses to explain this striking effect, but most of them have been very crude. In the *Veterinary Record* of March 21st, 1925, however, Prof. H. Dryerre and Prof. J. R. Greig, of Edinburgh, put forward an interesting theory. In the first place they combat Pugh's suggestion that the condition is essentially a ketosis which predisposes to a botulismus infection. They, on the other hand, hold that the disease is due to a parathyroid deficiency. This is probably so slight as to manifest itself only during the strain of pregnancy and parturition. Toxins such as guanidin then accumulate, and further, calcium metabolism is upset. At this point the animal is in a state of very unstable equilibrium, and a small amount of adrenalin liberated into the blood as a result of mild excitement is sufficient to precipitate a form of tetanic convulsions. For it has been shown by Guleke that a small dose of adrenalin will hasten the onset of tetany in an animal which has had its parathyroids removed. If, however, a large amount of adrenalin is liberated, the oxidation of the toxins is accelerated, the calcium loss is checked, and the blood pressure is raised. This, the authors suggest, is the reflex effect produced by the powerful afferent stimuli induced by intra-mammary insufflation. In this connexion it is interesting to note that cows which have an easy labour are generally those which may later develop milk fever, while those which experience a difficult labour seem to be relatively protected. In the latter case a large dose of adrenalin is presumably liberated into the blood-stream, while in the former only a small sensitising dose is produced. In view of this explanation, however, it seems strange that, while intra-mammary insufflation is sometimes inadequate to effect a cure, it is not more often just sufficient to cause a severe exacerbation. If, as the authors point out, any sympatheticotonia which exists in the condition is only relative and the supply of adrenalin is always low, then the injection of adrenalin suggests itself. We are assured that in the one case recorded in which this was done the result was encouraging. Whatever the ultimate fate of their theory these workers have at least succeeded in bringing the problem into relation with modern physiological conceptions. It is possible, too, that by this line of attack new light may be thrown not only on milk fever, but on eclampsia and similar conditions.

THE next social evening of the Royal Society of Medicine will be held at the Society's House, 1, Wimpole-street, Cavendish-square, W. 1, on Monday, June 15th, to commemorate the centenary of the birth of Charcot. At 8.30 P.M. the guests will be received by Sir StClair Thomson, the President, and at 9.30 P.M. Dr. Farquhar Buzzard, President of the Section of Neurology, will give an address on Charcot and the Centenary Celebration of his Birth.

THE BATEMAN APPEAL.

ON another page will be found the text of the reserved judgment in which the Court of Criminal Appeal gives its reasons for quashing the conviction of Dr. Percy Bateman. As already explained in THE LANCET, it has been felt that material assistance ought to be offered to Dr. Bateman to meet the legal expenses *of his successful appeal and to make good the deficiency* in his professional income. Accordingly the Bateman Fund has been opened and list of contributions have appeared in recent issues. We have received additional contributions as follows:—

	£	s.	d.
Already received and acknowledged ..	455	2	0
Sir James Barr	1	1	0
Dr. A. Hill Joseph	1	1	0
"Anon"	0	10	0
Dr. T. A. Hepworth	0	10	0
	458	4	0

Remittances should be forwarded to the Manager of THE LANCET, 423, Strand, W.C. 2, and made payable to the "Bateman Fund Account."

The Services.

ROYAL NAVAL VOLUNTEER RESERVE.

Temp. Surg. W. P. Elford, late R.N., to be Surg. Lt.

Proby. Surg. Sub-Lt. L. P. Spero to be Surg. Sub-Lt.

ROYAL ARMY MEDICAL CORPS.

Lt.-Col. R. N. Hunt is placed on the half-pay list on account of ill-health.

Maj. G. P. A. Bracken retires on ret. pay.

Capt. F. R. S. Shaw is secd. for serv. under the Colonial Office.

Temp. Capt. A. A. Wilson relinquishes his commn. on account of ill-health and retains the rank of Capt.

REGULAR ARMY RESERVE OF OFFICERS.

Col. H. J. M. Buist, late R.A.M.C., having attained the age limit of liability to recall, ceases to belong to the Res. of Off.

TERRITORIAL ARMY.

Maj. G. G. Marshall (late R.A.M.C., S.R.) to be Capt., and relinquishes the rank of Maj.

Capt. C. G. Irwin (late R.A.M.C., S.R.) to be Capt.

Capt. S. Summerson to command 8th (London) Sanitary Company.

ROYAL AIR FORCE.

Flight Lt. E. A. Lumley is promoted to the rank of Squadron Leader.

Flight Lts. J. F. Gallagher and James Craig (hon. Squadron Leader) relinquish their temporary commissions on ceasing to be employed and are promoted to the rank of Squadron Leader.

THE headquarters of the National Council for Combating Venereal Diseases, in future to be known as the "British Social Hygiene Council, Incorporated," have been removed from 102, Dean-street, W., to Carteret House, Carteret-street, Westminster, London, S.W. 1.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CXXIV.

THE TREATMENT OF DEMENTIA PRÆCOX.

1. The Investigation of the Case.

The condition known as dementia præcox was first described by Kraepelin as including a large group of insane patients, mainly adolescents, who, after passing through phases of extreme mental excitement, settled down into a progressive dementia. From this early description the term derived a sinister connotation in view of the terminal dementia, and indeed, for a time, whenever a suspected case recovered the diagnosis was called in question.

Of late years, however, the conception of the disorder has radically changed, and the prognosis, although not favourable in any advanced stage of the disease, yet affords considerable hope if cases are placed under treatment sufficiently early. In out-patient clinics and in private practice it has been possible to investigate cases at a much earlier stage than that which would warrant certification as insane and detention in a mental institution. It has become clear that the original conception was derived from the study of severe and degenerative end-products of a process of which the early symptoms may be manifested by many adolescents whose mental status would not be seriously questioned. The most satisfactory view of the causation of the condition is to regard it as the failure to adaptation of the individual under the stress of circumstance. No one can have failed to realise that from the time of puberty, through adolescence, and up to adult life, great changes are in progress physiologically and psychologically as the boy grows into the man and the girl into the woman. These changes are such as to fit the individual for the detail of his life, and they should so march as to keep pace with the increasing demands for self-control and a sense of responsibility. Growth, both mental and physical, may be looked upon as the unfolding of the bud, a natural process of development; vagaries in the final form depend upon the innate characteristics and upon the pressure of environmental factors. There is a continuous modification of the organism, constituting a delicate adjustment to the natural process of growth on the one hand and to the moulding pressure of the environment on the other; a satisfactory adaptation within the personality and character is shown by the practical capacity to utilise and obtain pleasure from the opportunities which life always presents. Should circumstances be unduly hard, should innate vitality be weak, or should the original germ-plasm be abnormal, then adaptation is liable to fail. The result may be a warping of the character and personality and consequently of the subsequent life-history, but in more serious instances a breaking-up of the integrity of the organism will ensue. This is shown mentally by a schizophrenia or dementia præcox development, and the demented mind will be housed in a dilapidated physical body which exists vegetatively, and is an easy prey to infection by such organisms as those of tuberculosis or pneumonia.

If the disorder is to be successfully combated, it is of the utmost importance that early failure of adaptation or the tendency to such failure should be recognised before the establishment of degenerative changes such as those described by Mott in the endocrine organs and in the central nervous system. Yet it is an extremely difficult task to set forth in any systematic way the indications which are of value, for there is no definite organic sign, and the symptoms of early failure of adaptation are revealed only in the higher mental functions.

Suspicious Symptoms.

The spring-time of life is noted for inconsequentiality and variability of conduct and thought, and it must not be assumed that extravagance in either direction is necessarily a mark of mental deterioration, but normal biological evolution ensures that there shall be a swing back from any extreme to adjustment to practical life. Experience must be eagerly courted and as intensely avoided from time to time; disappointments must be encountered, successes must be lived down, childish sentiments must be superseded, and the domination of the parents must give way to self-conscious recognition of the ties and limitations as well as of the possibilities of adult life. Many of the episodes of youth, its emotional storms, its ideational excursions, are of the nature of psychotic crises through which the more fortunate individual passes by virtue of a firm supporting home influence and his own innate stability. Where the home influences are complex and where there is a constitutional weakness, serious results may follow. Persistence of mood is, perhaps, the most striking of the early symptoms, for it is not normal for the adolescent to be depressed, obstinate, or sulky for more than a few days at a time, nor should he live in a constant state of lively self-satisfaction. There should likewise be a fluidity of interest; absorption in one person, one kind of play, or one line of work for several months on end portends failure of proper development. Self-absorption is natural in the girl of from 16 to 20 as is conceit in the boy of the same age, but neither state should be so persistent or so profound as to interfere with enjoyment of social intercourse and a proper consideration for the practical details of life. Self-depreciation with undue sensitiveness, persisting for any length of time, is strongly suggestive of some internal difficulty of adjustment. Religious conversions, sudden changes of disposition, or of the choice of milieu are always indicative of important subjective crises and show that the patient needs careful handling for the time.

If the stress is not relieved, grosser symptoms are encountered, such as seclusiveness or deliberate withdrawal from play or home life; frequent and violent emotional storms of anger or of tears; and obstinacy carried to the point of negativism, which is a studied and deliberate opposition to the wishes of parents or friends, persisting and involving considerable limitations on the subject. Apathy and listlessness in the presence of opportunity for enjoyment or progress are characteristic of a certain type of præcox development. Regressions to more childish ways, an indifference to dress, to appearance, and to the opinion of others, and a falling away from the intellectual standard attained are all features of importance. Temperamental inadequacies, a failure to develop the normal interests, such as dancing in the girl and sports in the boy, are the forerunners of future difficulties.

As the condition progresses more positive symptoms appear—e.g., passionate attachments between children of the same sex, ruthless antagonisms between members of the family, habits of a perverted nature, sexual or otherwise, careless behaviour fraught with danger to the self or to others, violent assaults, destructive outbreaks, and phases of intense restlessness with excitement. Finally, it becomes apparent that the patient is definitely deluded or is being distracted by hallucinatory voices, while faults of conduct, of commission or of omission, show that a serious mental change has occurred.

Physical Signs.

Physical signs are not wanting; pathologically, as Mott has demonstrated, the disorder is associated with disturbance of the endocrine system, and there are indications pointing to this morbid change, such as alterations of nutrition, excessive adiposity, or emaciation. There may be rapid overgrowth of the bony framework or a failure of physical development.

The normal distribution of hair for the age or sex may be greatly disturbed, and there are changes in the texture of the skin with a patchy hyperidrosis. In the female there is invariably a disturbance of the menstrual function; usually it is delayed and, when established, there may be marked irregularity or suppression for months or years.

As a rule the patient is brought to the doctor with a very vague history of "nervousness," of "being run down," or "not quite himself lately." The tendency is for the case to be regarded as belonging to the group of functional nervous disorders, but no label of "hysteria" or of "nervous exhaustion" should blind the practitioner to the essential mental nature of the disturbance. Having satisfied himself that he is not dealing with an organic disease, he has to make up his mind whether the failure of adaptation is to be considered due mainly to innate weakness of constitution or to pressure of circumstance. The personal and family history will indicate to some extent how far responsibility should be ascribed to the innate factor, but much caution must be exercised in accepting the statements of the relatives. It is best to get them to describe facts of the patient's history rather than to listen to their interpretations. If an aunt, for instance, is said to have had "nervous breakdowns," the practitioner should ascertain whether these entirely incapacitated her and, if so, whether she were treated at home or away; in the latter case the breakdown was probably psychotic and therefore would have considerable bearing on the prognosis of the case under consideration. The character of the parents or guardians should be carefully estimated. If they are faddists, eccentrics, or emotionally unstable individuals, then the patient will have been subjected to much harmful emotional influence, and the disturbance may be a natural outcome of such an environment and accordingly more favourable in outlook. Where the parents show sound common-sense and can be regarded as competent not to make life impossible for a developing adolescent the occurrence of a breakdown is all the more grave. In older patients, young men at college and girls away at school or engaged in full social activity, inquiries must be made as to any emotional situation which may have arisen. Where a love affair has played an important part as an exciting cause there has usually been some abnormality; either the patient has not been able to derive proper satisfaction within the bounds of convention or else these bounds have been overstepped. In cases where the difficulty in the life of the patient is one that time cannot solve the prognosis is bad. For instance, a young man, the son of a widow, had made great efforts to pass an examination which would have given him an assured position and so enabled him to support his mother. He was unsuccessful and developed an extreme depression from which he passed into an acute dementing psychosis. Here the opportunity of his life had gone, never to recur, and the situation could not be solved by time.

THOMAS BEATON, O.B.E., M.D., M.R.C.P.Lond.,
Senior Assistant Physician, Bethlem Royal Hospital.

(To be concluded.)

ROYAL COMMISSION ON NATIONAL HEALTH INSURANCE.—The twenty-ninth meeting of the Commission was held at the Home Office, Whitehall, on May 21st, Sir Arthur Worley in the chair. Evidence as to the organisation and procedure of medical institutions was given on behalf of the Friendly Societies Medical Alliance by Mr. S. A. Syddall and Mr. Samuel Pride; on behalf of the Friendly Societies Medical Officers' Union by Dr. D. Holmes, Dr. John H. Roberts, and Dr. A. Hamilton; and on behalf of the South Wales and Monmouthshire Alliance of Medical Aid Societies by Mr. W. Conway and Mr. Evan Pugh. Thereafter the Society of Medical Officers of Health, represented by Dr. R. A. Lyster and Dr. J. J. Buchan, gave evidence relating to extensions of medical benefit and reorganisation of the various existing public medical services. Proof copies of the oral evidence and the relative statement submitted at the meeting of May 7th are on sale at H.M. Stationery Office (3s.).

Special Articles.

THE MILK-SUPPLY AND ITS IMPROVEMENT.

By WILLIAM G. SAVAGE, B.Sc., M.D. LOND.,
COUNTY MEDICAL OFFICER OF HEALTH, SOMERSET.

I.—ESSENTIALS OF THE PRESENT POSITION.

(Continued from p. 1097.)

THE first part of the summary considered only tuberculous contamination. We have now to note:—

Other Kinds of Bacterial Milk Contamination.

The facts are so well attested that it is not necessary to discuss these in detail. Only two points demand consideration, i.e.: (1) Is there any evidence, both as regards the bacterial cleanliness of milk and specific contamination with the organisms associated with infectious diseases, that conditions are improving and less unsatisfactory than as set out in numerous books and special papers? (2) Apart from recognised specific bacteria, is it of any moment that milk is heavily contaminated? Is it possible to take the line that the only bacilli we have to trouble about are the known specific bacilli and the others are only harmless saprophytic organisms which do not matter?

As regards the first consideration, from my own experience and as judged from published reports, I consider that up to two or three years ago there was little if any improvement in the bacterial contamination of milk. Premises were slowly, in most areas very slowly, being improved, but in many districts even this was negligible, while as regards methods little or nothing in the way of a cleaner collection of milk was appreciable. On the other hand, as regards distribution risks considerable improvements were effected.

Undoubtedly, during the last few years progress has been made, in part shown as improved premises, some improvement in the adoption of cleaner methods of milking, much more in regard to the installation into the minds of the producers that their existing methods did not meet with modern requirements, and most of all in greater care and attention to the milk after it leaves the hands of the producers. Amongst these, most importance is to be attached to the sowing of the seeds of dissatisfaction with existing methods in the minds of the producer, and the recognition which he is now receiving that his difficulties are considerable and need sympathy and help to surmount them. Incidentally, it will be shown later on how very great is the leeway to be made up before the conditions in the milk trade can be passed as satisfactory. Outbreaks of infectious disease spread by milk are still fairly frequent, and the diminution, if any, is due not to greater precautions in connexion with the supervision of the milk trade itself, but to the greater thoroughness with which cases and contacts of cases are guarded from coming in contact with milk.

The second point merits consideration because the argument is often heard that bacterial contamination of milk is of no moment in itself if tubercle bacilli or other pathogenic bacilli are eliminated. In other words, dirty manure-laden milk may not be nice but it does no harm. A good many considerations suggest that this is not a sound argument. On the bacteriological side we find that the bacterial flora of dirty milk is very complex. It is composed of bacilli of the *B. coli* group, a good many non-lactose fermenters, many anaerobes like *B. welchii*, streptococci of many types, and all sorts of other bacteria. While undoubtedly the majority are of no pathogenic significance, it is impossible to speak with any certainty about the others. The streptococcus group comprises strains which are amongst the most dangerous bacteria, and our knowledge is all too inadequate to state with any assurance that some of these highly pathogenic strains are not included in the flora of ordinary dirty milk.

The susceptibility of the infant gastro-intestinal tract to bacterial invasion is a well-attested fact. That scourge of infant life—summer diarrhœa—has never had its ætiology explained, and the theory that it is not an infection with one specific type, but has a complex bacterial origin from many different types, such as streptococci or non-lactose fermenting bacilli which may be met with in contaminated milk, has at least as much to support it as any other conception as to its origin.

Numerous epidemiological studies favour the above contention, and show that the substitution of a milk reasonably free from bacteria for one heavily contaminated is directly associated with a material decrease in infant mortality-rates.[*] Apart from such non-specific or, probably more accurately, not definitely ascertained specific infections, it has to be borne in mind that the processes necessary to produce clean milk in themselves definitely reduce the likelihood of known specific bacteria gaining access to the milk. For instance, diphtheria, scarlet fever, typhoid fever, and septic sore throat are frequently spread by milk and usually from its contamination by an infected milker. Given such an infected milker, the liability of the milk to become specifically infected is immensely reduced when strict cleanliness is observed. This important point is frequently overlooked. In the same way all the tubercle bacilli in milk do not come direct from an infected udder, but many gain access from cow manure. The habits induced by the practice of clean milk production include care and attention to the milkers, and help to increase the barrier against specific infection.

The facts strongly emphasise the need to follow for milk the broad public health rule which teaches that the reduction of general bacterial contamination, although we may not be able to indite a specific agent, is usually followed by a lessening of infection from that source.

The Distributory Milk Trade and Clean Milk.

Point No. 6 requires consideration because this section of the trade is powerful and vocal, and its utterances would lead the uninitiated to imagine that from its efforts conditions are so improved that a clean pure untreated milk is being supplied. The large milk companies have materially improved the handling of milk *after* it is delivered to them. Cooling is increasingly practised, and contamination during subsequent stages is reduced by more rigid cleanliness of vessels, greater supervision over personnel, and lessened opportunities of contamination from outside sources.

On the other hand, I am unable to find evidence that they exert any controlling influence of moment over the bacterial quality of the milk which reaches their collecting depôts. Against this view it is possible to point to regulations in regard to the production of milk which some of the big companies have framed, and to the statement that inspectors are provided who exercise supervision over the conditions of milk production. Possibly these measures exert some educational influence, but my personal experience, which is very extensive, is that milk producers sending their milk to companies with these regulations are no cleaner in their methods than the average milk producer. To make the control over production more than a dead-letter, I have offered in two cases specially to report to the company producers whose methods are very unsatisfactory in order that the purchasing company can take action, but the offer has been declined.

The results of numerous bacteriological samples show that much of the milk delivered to the collecting depôts, most of which are connected with distributing companies, is grossly contaminated bacterially, and the only purification step taken is artificial—i.e., dirt extraction and pasteurisation. The milk-distributing trade could enormously improve the bacterial quality of the milk-supply within a very short period by the simple expedient of offering a higher price—it need be only a slightly high price—for milk so collected that it has a low bacterial content. I am unaware of any adoption of this attitude in this country, and although I have suggested it in several quarters it has never been seriously considered.

Chemical standards for delivery of milk to the distributor are widely adopted, because milk with a high cream content is a business asset. A low bacterial content is neither an asset to producer or distributor under present conditions unless the milk is obtained so pure that it either can be sold as graded or render all pasteurisation unnecessary. It is of importance to realise this factor since it destroys the basis of the complacent argument that the milk trade as a business proposition will as a whole improve its supply without outside compulsion. As explained under pasteurisation that trade process meets their business requirements, and there is no driving force behind any other remedy.

Pasteurisation.

Pasteurisation is a key problem in connexion with clean milk. Much of the abundant literature on the subject is loose and confusing, mainly because essentially different things are discussed as if they were identical. In connexion with milk we have to distinguish two types which for convenience may be designated *controlled* and *uncontrolled* pasteurisation.

Under the Milk (Special Designations) Order, 1923, a grade of milk "pasteurised" is recognised. It is defined as milk "retained at a temperature of not less than 145° and not more than 150° Fahrenheit for at least half an hour," and immediately cooled to a temperature of not more than 55° F. This may be called controlled pasteurisation since it is something quite definite. As such, it is possible to determine with certitude whether pathogenic bacilli will survive such treatment on the one hand, and on the other, whether the food value of the milk will be impaired.

In contra-distinction to such definite heat action the great bulk of the milk pasteurised in the country is dealt with by what may be termed uncontrolled pasteurisation. A "flash" type of pasteuriser is in general use through which the milk passes continuously, the milk being heated in its passage but only being retained at the maximum temperature for a brief moment, while for the rest of the time it is at a variable but lower temperature. There is no proper control, and I find different temperatures are used in different depôts, while it varies in the same depôt according to what the operator thinks is necessary in relation to the air temperature. The operators are untrained in the scientific principles involved, work by rule-of-thumb, and realise that when time presses they can expedite matters by passing the milk through faster. There is no guarantee that pathogenic organisms will be destroyed, or that the milk will not be damaged in its vitamin content.

Such uncontrolled pasteurisation of milk is very widely practised and in the milk depôts of Somerset the bulk of the milk is so treated summer and winter. Not infrequently the milk is again pasteurised in the large urban area to which consigned. Such milk is not labelled as pasteurised. This extensive uncontrolled pasteurisation of milk is a trade adaptation not to make milk safer but to keep it saleable and prolong its life. That is the sole reason why the considerable expense of doing it is incurred.

The advocates of pasteurisation are fond of stating that its adoption does not interfere with steps to obtain a clean milk. I have rarely heard a more absurd statement or one more in conflict with the facts. In early days when milk was produced near the milk consumers the trade managed, but when long-distance milk conveyance became a necessity and milk could not be delivered under 24 hours from the time of production, one of two things had to happen. Either the milk (at least in summer) had to be artificially preserved, or it had to be collected reasonably free from bacteria and sent cool. The former was the easier and the cheaper course, and when the addition of chemical preservatives was stopped, heat was the alternative adopted. Pasteurisation enables initially dirty milk to survive as a commercial product, and but for it clean cool milk as the only alternative would have had to be provided. In view of the practical difficulties and cost of such a pure clean milk this may have been unavoidable, and, indeed, the best plan at the time, but the fact remains that pasteurisation has come in, and remains, as a substitute for cleanliness in production and handling in this country.

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[*] For details see Savage's Milk and the Public Health, Macmillan and Co.

At the end of 1923 the number of licences granted for the sale of "pasteurised" graded milk was 164 (shops 107, depôts 57), an insignificant proportion of the whole. A very large proportion of the milk in the country is submitted to uncontrolled pasteurisation.

The Position of the Milk Producer.

Broadly considered, milk producers handle their milk in one of three ways.

One group comprise producers who are themselves distributors. As a rule the question of souring of the milk does not arise, as most of the milk is distributed within a few hours of production to customers in the vicinity. If, however, they can earn and maintain a reputation for the supply of really clean pure milk, such a reputation is an asset of value and likely to increase their trade. This group of producers is the most sensitive to suggestions as to improving the bacterial quality of their milk.

A second group comprises producers who deliver in bulk to dairies in their immediate vicinity. If the distributing dairy is not too large, so that the contributing milks maintain a measure of identity, local reputations are of some but limited value, and diminish in importance with the amount of milk handled. Producers of this group can be induced to take a little interest in the quality of the milk they deliver.

The main group of producers deliver in bulk to milk-collecting depôts situated either in their vicinity or in large towns. Their milk is at once mixed with other milk and promptly loses its identity. When delivered and accepted the producer has no further interest in it. Provided such milk is not so acid as to be rejected, from the business point of view there is not the slightest inducement to the producers to supply a cleaner article than will be accepted. This constitutes the basic difficulty in the way of reform in production. The producer with perfectly unanswerable logic points out that what the milk inspector asks costs money, and if he spends it he will get no more for his milk; why should he do this and that when others do nothing. The much higher standard of supervision over cowsheds in urban areas than over those in rural districts is responsible for much heartburning amongst milk producers.

All acquainted with the position must feel considerable sympathy with the milk producer under the present difficult conditions. It is essential that the clean milk producer should not be penalised at the expense of the neglectful producer, and he is entitled to ask that a reasonable margin of profit should not be diminished by unreasonable demands or by requirements not universally enforced.

Losses in the Milk Trade from Contaminated Milk.

In the main the direct losses are from two sources—from milk which goes sour and is unfit for distribution, and milk which, although not yet sour, requires pasteurisation before delivery to the consumers. As regards the former, no exact figures are available, but the Second Interim Report (1917) of the Committee on the Production and Distribution of Milk gives particulars of one firm which, between April and August, 1917, received 68,000 gallons of milk (value about £1000) in a sour condition, and the Committee quote the opinion of several independent witnesses that the average percentage of London milk lost through souring was from 1 per cent. in winter to at least 2 per cent. in summer. A loss of 1 per cent. for London alone means a loss of about 900,000 gallons, which at 1s. 2d. per gallon is worth £52,500. A report[7] issued by the Ministry of Agriculture calculates a loss of at least 1 per cent. sour and in other districts quoted 1–2 per cent. loss.

As regards the cost of pasteurisation, this last report takes 10 per cent. as demanding pasteurisation to save it. It puts the cost of this at ½d. per gallon, or over £2000 per million gallons handled. The yearly consumption of liquid milk is about 700 million gallons, so the loss from this cause is considerable. Also 10 per cent. is a totally inadequate amount to allow for this item, as it does not include the additional milk which is pasteurised because of the fear that it may become sour. The total milk pasteurised is probably at least 50 per cent. of the whole supply (Dr. Robertson, M.O.H. of Birmingham, considers that more than 70 per cent. of the milk of our large towns is pasteurised). The pasteurisation of 350 million gallons at ½d. a gallon represents £727,500.

A third factor in the question of cost is that the consumption of milk is undoubtedly restricted by the fact that so much of it goes sour in the homes of the consumers. A less perishable commercial product will stimulate and increase the consumption of liquid milk. This will help the producers, since larger herds are more economical to maintain, and it gives a more certain market, while it will help the distributors, since milk is more profitable sold as liquid milk than when the excess has to be converted into milk products. These three factors together are probably sufficient to justify the ninth postulate set out above.

Adequacy of the Existing Legal Powers.

The connexion between the quality of the present supply and the inefficiency of the existing legal powers is a close and important one. It will, therefore, be discussed in some detail in the next article.

Contamination upon Consumers' Premises.

The want of care which milk receives in the homes of many of the consumers is well known and needs no detailed discussion. A minority of authorities consider the bacterial contamination from this source as the most important which milk receives, but this is not a view with which I can agree in view of the fact that any initial contamination with bacteria is multiplied many fold before it reaches the consumer, and this is only true to a limited extent for bacterial additions in the home. The want of care in the home is only in part due to negligence; a contributory factor of great importance is the very inadequate facilities in the houses of the poorer classes for food storage.

Graded Milk.

The educative value of graded milks will be discussed in a later article. As a direct contribution to the bulk of milk available to the consumer their effect is insignificant. On Dec. 31st, 1923, the producers of these milks were: Certified 55, grade A (tuberculin tested) 46, grade A 50; total 151. At the end of 1922 the total number was 63. In the county of Somerset, with over 5000 milk producers, those producing graded milks at the end of 1924 numbered only five—i.e., certified 1, grade A (tuberculin tested) 2, grade A 2.

(To be continued.)

RECONSTRUCTION OF ST. BARTHOLOMEW'S HOSPITAL.—In his report, as treasurer, for 1924, Lord Stanmore says that no definite information can yet be given as to the reconstruction of the hospital. It has, however, become clear that the required additional accommodation cannot be provided on the existing site; certain property in the immediate vicinity which might be utilised advantageously has therefore been acquired. The leasehold interest in Nos. 18 to 21, Charterhouse-square and Nos. 1 to 5, Charterhouse Mews (built a quarter of a century ago as an hotel) has been purchased for £51,262, and negotiations for the acquisition of the freehold and of that of No. 22, Charterhouse-square, adjoining, are in progress. With comparatively slight alteration these premises would be suitable for the housing of a large portion of the nursing staff.

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[7] No. 41: Studies Concerning the Handling of Milk, 1924.

ROYAL COMMISSION ON LUNACY AND MENTAL DISORDER.

FURTHER SITTINGS.

(*Continued from p. 1018.*)

THE sittings of this Commission were resumed on May 22nd, Mr. H. P. Macmillan, K.C., the Chairman of the Commission, presiding.

EVIDENCE OF THE NATIONAL COUNCIL FOR MENTAL HYGIENE.

The first witnesses were Dr. Reginald Worth, Dr. E. Farquhar Buzzard, and Dr. H. Crichton-Miller, and they appeared on behalf of the National Council for Mental Hygiene. The Chairman explained that it was proposed to incorporate the Council's précis of evidence in the records, and to question the witnesses on certain points. The Council, the witnesses' précis stated, aims at bringing the treatment of mental disorder into the fold of general medicine. Whilst mental hospitals would still be necessary, there remained a large class of patients for whom at present very little provision was made—the class of early and often recoverable cases, attention to which gave the greatest hope of diminishing the incidence of more serious mental disorder, or of improving its treatment and understanding its causation. There was a world-wide trend in this direction, as shown by the formation of clinics or special departments to deal with such patients in connexion with general hospitals. Cases in which there was definite alteration of conduct, however, were not suitable for these clinics.

Patients suffering from mental disorder included, the Council say, cases in which the question of certification did not arise, such as some cases of hysteria, fears, neurasthenia, and anxiety neuroses. Secondly, those in regard to whom the question of certification arose, but who need not necessarily be certified, either because they were willing to submit to treatment, or were non-volitional—i.e., did not express objection to treatment. Thirdly, there were those for whom treatment and care were required, but as these were refused by them, obligatory treatment became necessary. It was contended that this country is lacking in adequate provision for dealing with the situation in regard to early cases. In 1923 there were 3919 suicides (2887 men and 1032 women), and it is held that these figures show a want of adaptation which is abnormal, and that the numbers could be definitely reduced by a better understanding of mental states. Incidentally, reference is made to the increasing number of cases showing mental symptoms after encephalitis lethargica, the notified cases of this kind being 1470 in 1921, and in 1924 3029. The proposed mental clinics could help materially in dealing with these cases.

Facilities for Early Cases.

The National Council circulated to 237 hospitals and infirmaries a questionnaire as to facilities for treatment of early mental cases, and 159 replies were received. In 135 institutions there was no provision for such treatment, and in 24 there was some provision, but in only five were there facilities for the in-patient treatment of early mental disorder. Many patients already attended general hospitals without realising that they were primarily suffering from mental disorder, and they continued to attend the out-patient department even when their condition was correctly diagnosed, as no means of giving them proper conditions of treatment existed, and they might be undermining the mental health of every member of their household. The department for these cases should be in charge of a suitably qualified physician. In these circumstances many cases regarded as "mental" would be found to be primarily due to physical disease. From such an arrangement, too, medical students and nurses would benefit in the matter of instruction. The Council suggest that visitation of mental patients in these clinics would not be needed, but naturally a grant of money by a public body would carry the right of supervision.

A further recommendation is that voluntary boarders should be allowed in all county and borough mental hospitals, and that the voluntary boarder system should be extended to rate-aided institutions. Medical practitioners should be allowed, they submit, to treat willing and non-volitional patients without certificates in registered nursing homes and similar institutions. They consider that wherever non-volitional cases are received some form of notification to, or supervision by, the central authority is desirable. They urge the registration of all nursing homes under the Ministry of Health; every type of abuse which might arise could then be dealt with by the ordinary process of law, and patients could have a wide choice as to where they would be treated.

Administration of Public Mental Hospitals.

The Council feel that hospital methods should be adopted in these institutions to the fullest extent, though they make this statement without implying to what degree this does not obtain already. Consultants in general medicine and surgery should be appointed for mental hospitals, and the staff of the latter should be permitted to hold corresponding positions in psychiatry at general hospitals. The Board of Control should have greater powers to enforce the adoption of such facilities where these do not exist. Practitioners should be enabled to keep in touch with their patients in mental hospitals, and to assist in the treatment where possible; they could then continue treatment when the patients returned home.

After-Care.

The Council recognise that in many cases the recurrence of mental disorder is precipitated by the patient's return to home conditions which are unsuitable; therefore such work as that being done by the After-Care Association should be in every way encouraged, and should be generously supported by the financial authority. In conclusion the Council state that such problems as illegitimacy, dependency, and the prevalence of venereal disease, prostitution, vagrancy, alcoholism, &c., are closely related to minor states of mental disorder, and are often caused by them. They consider that there is no just reason for omitting the skilled treatment of those patients on a voluntary basis, in the same way as other diseases are dealt with.

Dr. Buzzard, in answer to the Chairman's questions, said the Council was founded in 1922, and that it had a distinctive purpose in contrast with that of other bodies engaged in this class of work. One of its aims was to educate the public in regard to mental matters; and the education of the medical profession in psychiatry was recognised as deficient, though much of his practice would bring him into contact with it. Dr. Buzzard agreed, however, that students had already to become acquainted with far too many specialties. The witness did not advocate treatment in a general hospital of a case which needed restraint for any length of time.

Supervision of All Nursing Homes.

The Chairman said the suggestion that all nursing homes should be under supervision was a novel one and asked whether the witnesses thought it would be welcomed.

Dr. Buzzard replied that probably it would not be generally welcomed. The idea underlying the suggestion was the same as that concerning the treatment of mental cases in general hospitals: that where one kind of disease was dealt with another kind also could be treated.

Lord Russell asked whether the Council had considered the question of defining a nursing home in such a way that in the event of having to prosecute it would be clear, and Dr. Buzzard said that had not been gone into, but most members of his Council agreed that some kind of registration and supervision of the nursing home was desirable. The standard of these homes was capable of improvement, and it would be difficult to enlarge the liberty with which mental cases were treated in nursing homes unless all nursing homes were brought into the same category.

Dr. Worth said that if a person lost volition he should, in his view, be simply notified to the Board of Control, so that that body could know where he was. But there was no need to notify a patient who voluntarily sought treatment.

The Chairman asked who would define the voluntary patient, and the reply was that the doctor in charge was the person to do that.

The Medical Superintendent's Duties.

Dr. Worth, replying to a question by the Chairman on this matter, said he did not think the subject had been discussed by the Council. But he knew one institution in which a medical superintendent had a colleague who was administrative director, and the two were not on speaking terms. The duties were so difficult to arrange that it was necessary to have one head, who must be a medical man. This was the more necessary as the whole régime and outlook concerning the patient was a part of the treatment. The Council wished to preserve the contact between the patient and his own medical practitioner; also that there should be a closer association between mental hospitals and teaching institutions, as well as a more frequent and general resort to consultants. In his own mental hospital, which was for rate-aided patients, a retaining fee was paid to consultants. Dr. Worth dissented from the idea of considering the mental hospital as a place of last resort. Mental hospitals themselves showed a high percentage of cures. In cases requiring prolonged treatment, the patients ought to go straight away to a mental hospital.

Advisory Powers of the Board of Control.

Dr. Crichton-Miller said he favoured the Board of Control being given greater advisory powers than it at present possessed, and thought it should be possible for a general practitioner to consult the Board in regard to a case presenting difficulty. He recognised the help which the Board already gave in individual instances, but he wished that body to have wider statutory powers. A practitioner could then treat a mental case with the feeling that he was not incurring serious legal responsibility.

CHAPLAINS AND RELIGIOUS EXERCISES.

The Bishop of Chelmsford attended to speak in support of a more clear recognition of the status of chaplains in public mental hospitals. At present the appointment of these gentlemen rested with the respective medical superintendents. Attendance of patients at services held by the chaplain should be absolutely voluntary, and no question of a "test" should arise. Though the chaplain's remuneration should be based on the size of the institution, the witness would object to anything in the nature of a per capita scale. An effort was now being made to give some simple psychological instruction to candidates for ordination, in order to fit them to deal more satisfactorily with unusual and odd personalities.

Sir Humphry Rolleston said this question of the association of clergyman and medical man was a very important one, as there was sure to be some overlapping. Spiritual comfort given by the chaplain was closely related to the processes involved in psychoanalysis.

The Bishop replied that it was hoped there would be a happy partnership between the medical officer and the chaplain, just as in ordinary homes. It was felt that the appointment of chaplain should be a permanent one; in any case three years was far too short a time. In this connexion the question of superannuation was discussed. The witness did not think it wise for any man to be chaplain to a mental institution all his life; he should have a certain maximum period of service.

The Rev. W. E. Barnes, chaplain at the mental hospitals of Hanwell and Cane Hill, said he was appointed to the first named in 1920 and to Cane Hill in 1923. Formerly he was chaplain at the British Embassy Church at Petrograd for six years. Questioned as to his activities at the two mental hospitals, he said he was a friend of the patients in a different way from the doctors, and he saw them at all hours and in all circumstances. At Hanwell there were 100 communicants, at Cane Hill 60. Patients looked upon him as a definite link with the outside world, and when relatives did not take the necessary interest in patients he wrote to the former, often with good results. His relations with the medical staff were always friendly, and he frequently discussed cases with them. He had had no training for this particular kind of work until he entered upon his duties. Cases of ill-treatment of patients probably did occur, but he had never seen a case of punitive or vicious usage of a patient. He had heard, however, of two alleged cases having been investigated, in one of which the attendant concerned was dismissed.

THE LEGAL ASPECT OF LUNACY.

Sir Archibald Bodkin, K.C., attended to discuss with the Commission the legal aspect. He said he thought Part XI. of the Act might very well be re-drafted and very much condensed. When the Legislature passed the Mental Deficiency Act, 1913, it repealed the section which provided that the Order of the Commissioners in Lunacy should be accepted without further proof. Such proof was unnecessary, and in the Criminal Justice Bill now before the Commons this proving of signatures and orders of public authorities would be dispensed with, and if the Bill became an Act, this provision would extend to the Act of 1913. He agreed with the Chairman's suggestion that the subsection of Section 315 dealing with misdemeanours connected with detention and treatment of patients in unlicensed houses should be divided into two, with the appropriate penalty set out in each; or to have as many subsections as there were offences. A number of legal points were discussed by the witness in some detail.

EVIDENCE OF THE LORD CHANCELLOR'S VISITOR.

At the Monday morning session the chair was occupied by Mr. N. Micklem, K.C., and the witness was Lord Sandhurst, the Lord Chancellor's Visitor. He explained that he had been carrying out the duties of that office since 1910. There was now, he said, only one Master in Lunacy, though an Assistant Master had been appointed. Provisions concerning visitation were set out in Sections 183 to 186 of the Act. Rule 5 of the 1893 Rules enabled the Master to direct a visit in any case in which an Order appointing a receiver was pending, or in which an Order had been made under Section 116, and he appointed a visitor. Most of the witness's visits were made to private houses, the people concerned possessing some means. In the case of lunatics so found, the visitor had to pay two visits every year in every case, and the visit had reference not only to the lunatic, but also to his property and to the amount of his income and expenditure. Recommendations might then be made as to his property, such as the selling of a part of his capital, the proceeds to be devoted to his maintenance; or some of it might be more profitably invested. At present there were only 219 inquisition cases, but on the Master's books there were 6100 cases, any of whom there was the possibility of the witness being asked to visit. On the visitors' books there were 1100 cases, and 500 of these were classed as "not lawfully detained" under 116 (d), and in many of these the persons were weak-minded, proceedings having been taken because they could not manage their affairs. Three hundred of the 1100 were in institutions for the insane. The special visits paid by request in 1921-25 numbered 231. When an inquisition case was under private care, the expectation was that he would be visited four times a year for at least two years after the inquisition, as such persons had not the advantage of any other visitation. There were at present only two or three such cases. About 1850 visits were paid each year. In the case of a new patient the witness said he always paid a surprise visit, and he preferred to ascertain some particulars about him first, for a knowledge of his tastes and leanings facilitated a congenial conversation. He inquired into everything bearing on the patient's comfort and well-being. Many of the patients visited by the Chancery visitors were not certified, nor even "alleged lunatics"; they were persons who, by reason of mental infirmity arising from old age or disease, were incapable of managing their affairs, and for whom a receiver had been, or was sought to be, appointed under Section 116 of the Act of 1890. Most of such persons were suffering from some form of senile decay.

Complaints.

Fairly frequently the witness found complaints were made as to the food supplied. He had been into the kitchens and seen the food prepared, and he had been present when the patients had their meals. His view was that the meals were as good as one could expect in an institution of this character; there must be a certain amount of routine, and he would not describe the meals as dainty. If there seemed to be reasonable ground for complaint he reported the matter to the Master in Lunacy; but usually he suggested to the medical superintendent that something more might be done for the patient. Complaints about noisy, offensive, and insane patients were really a matter of classification of patients, and the complaints under this head were often well founded, the first people to admit this being the medical superintendents themselves. Basingstoke mental hospital was mentioned as a model to follow in this respect. With regard to alleged roughness and force in dealing with patients, many required some force for their control, and some were aggressive. Even senile cases were liable to periods of impulsive violence, and the witness gave an instance of this. Usually when a complaint was made, though he talked to the nurses, other patients, and the medical staff, he could not find anything tangible to work on. If he felt there was anything serious he would report it to the Master, and the Master would report it to the Commissioners. In the case of private care, a valid complaint would result in the removal of the patient to some other care.

In answer to Sir Ernest Hiley, the witness said that he had very seldom had occasion to report a case of alleged bullying or ill-treatment in the last 15 years.

The Law in Regard to Visitation.

Lord Sandhurst said the law was scarcely satisfactory with respect to visitation by the petitioner. In the petition he undertook, personally or by someone specially appointed by him, to visit the patient every six months; but there was no known way of enforcing this undertaking, and it was by no means always carried out. Neither was there any guarantee that the deputy would be a person agreeable to the patient. Usually it was desirable that the petitioner should be *en rapport* with the patient. His own experience was that the duty of visiting was rarely neglected in the humbler walks of life.

The Licensed House.

The witness said he considered that the licensed house fulfilled a most useful function, and regarded it as a misfortune that, under proper safeguards, no new licence for such could be granted. The smaller licensed house offered a degree of quiet and privacy and home-like conditions which larger institutions could not attain to; and if such accommodation was not otherwise procurable, the friends of patients were tempted to seek it in nursing homes or private houses, sometimes without certification. Two further complaints spoken of by the witness were insufficient personal attention by the medical superintendent and wrongful detention. The latter complaint was very common, but groundless, and the former was sometimes due to a personal dislike of the medical assistant. He said he had never met with a case which he considered had been wrongly certified, but he thought some patients were detained longer than was necessary.

EVIDENCE OF THE MASTER IN LUNACY.

In the afternoon the witness was the Master in Lunacy, Mr. G. M. Hildyard, K.C., who explained that when a person was certified as a lunatic he could no longer protect his property, which was therefore, to some extent, at the mercy of his relatives. It had been suggested that the latter might sometimes be tempted to get a weak-minded (but not insane) person certified so as to obtain control of his property. He could not say he had had to deal with such a case, but the possibility should be guarded against. At present a lunatic's maintenance was paid for in one of the following ways: By the guardians out of the rates (in the case of paupers); by the friends or relatives out of their own pockets; by trustees under a discretionary trust; by friends or relatives out of the lunatic's property (without authority); by friends out of the lunatic's property under authority other than that of the Lunacy Court; or by a committee or receiver out of the lunatic's property under the authority of the Lunacy Court. These the witness explained and discussed with the Commission separately; also the question of the expense of proceedings connected with the administration of lunatics' estates, the Master promising to send to the Commission some bills of costs. The Master also commented on the hardship suffered by the poor person of unsound mind by taking away his right to his old-age pension of 10*s.* weekly. If the projected new Pensions Act should pass the House, such hardships would be a good deal accentuated.

KING'S COLLEGE HOSPITAL.

FESTIVAL DINNER.

THE festival dinner of King's College Hospital was held at the Savoy Hotel on May 20th, when the Duke of Connaught presided. Covers were laid for nearly 350 guests. After the loyal toasts, the Duke of Connaught, in proposing King's College Hospital, remarked upon the financial strain which progressive scientific medicine and surgery imposed of necessity on an efficient hospital, but he was happy to report that great progress had been made in overcoming the adverse conditions that had been imposed by the war and its after-effects. Income had increased and expenditure decreased, but the two great objects the management had in view were first to pay off the debt, and secondly, to increase dependable income in order that more beds might be made available for ordinary patients. The total liabilities now, including the bank loan of £24,000, were not more than £32,000. For three years after the Armistice the hospital struggled against overwhelming difficulties. In 1919 and 1921 the expenditure exceeded the income by £38,000, and in 1920 the debt was increasing at the alarming rate of £1000 a week. Seven wards had to be closed as well as the convalescent home at Hemel Hempstead, and unfortunately the hospital was still without that very desirable adjunct. During the past two years ceaseless efforts had been made to raise money, and by the end of 1923 the debt had been reduced to £77,000. Last year Lord Hambleden with his usual generosity had cancelled his loan of £20,000 and a grant of £16,000 was made by King Edward's Hospital Fund, the grant being conditional upon 40 more beds being opened, of which 16 were to be reserved for accidents. With other help the debt had now been reduced to £24,000 and the closed wards had been reopened. Altogether 40 additional beds had been provided for general patients since the beginning of the year. In order to maintain the hospital with its additional accommodation an appeal for subscriptions of £10,000 a year had been made, and his Royal Highness had received as a result of the dinner appeal the promise of a donation of £2500 from Mr. Bernard Baron besides other subscriptions of £1000. The equipment for the use of ultra-violet rays had been installed, but the apparatus was not as powerful as they could have wished, and there was an opportunity for someone to subscribe £200 or £300 to provide a method of treatment the effect of which was often remarkable. A new source of income available since the war was the payment by ordinary patients, and out of a total income of nearly £80,000 no less than £28,600 had been received from patients themselves, while approved societies had paid another £1800. Payments by private patients were increasing, especially from the professional and tradesman class, who were attracted to the hospital because they could not afford to pay the fees of nursing homes contributed towards hospital expenses.

Lord Hambleden, in his reply, said that by strict economy and through the fall in prices the management had been able to reduce the cost of beds by something over £1 per bed per week. When 22 years ago it was decided to remove the hospital from its old site the governors expressed the hope that the income to be derived from that site would be used for the endowment of the new hospital. Unfortunately, the site was still mortgaged in the sum of £80,000 used for building the new hospital. Apart from the old site the endowments were small, amounting to no more than £5000 a year, and for years past practically the whole of that income had been used to pay the interest upon bank overdrafts. Since the appeal was started last autumn the liabilities, which were then over £70,000, had been reduced to a sum approaching £20,000, and he appealed to all who respected the voluntary hospital system to make the liabilities disappear altogether. The hospital now served a population of something like two millions of people. In conclusion, Lord Hambelden referred to the help of Messrs. Holdrons which had resulted in a donation of £1000, the help of South London schoolboys and girls, and the generous support of working men.

Lady Cheatle then proposed in felicitous terms the health of the chairman, and his Royal Highness, in replying, remarked that it was the first time the toast had been proposed by a lady, and he congratulated her upon the admirable way in which she had done it.

Lord Hambleden announced that the total sum collected for the Duke of Connaught's list before the dinner was £7305, in addition to subscriptions amounting to 37 guineas a year. The total collected at the dinner was £6025, making a total of £13,381. There was a further sum collected last autumn of £12,613, bringing that total up to £25,995. Other sums received for the reduction of debt amounted to £40,000. The sum, therefore, given in reduction of the total liabilities of the hospital was £65,995. The Stock Exchange Dramatic and Operatic Society had, he said, subscribed £105 towards the ultra-violet ray apparatus, and had promised to make up the whole sum required by Christmas.

EPSOM COLLEGE: GERALD STANLEY MEDICAL SCHOLARSHIP.—The Council of the College are about to select candidates for a Gerald Stanley Medical Scholarship, which is open to the necessitous son of a medical man. Candidates must be fully 12 years of age, and be intended for the medical profession. The scholarship is of the value of about £130 a year, and is payable in advance to the Bursar of Epsom College. It will not be continued beyond the scholar's seventeenth birthday, by which time he should have passed the matriculation examination of the University of London or its equivalent. On joining a medical school the holder of the scholarship will be required to attach himself to that of St. Bartholomew's Hospital, where, under certain conditions, a further scholarship will await him. Full particulars and forms of application can be obtained from the Secretary, at the office of the College, 19, Bedford-square, London, W.C. 1.

REX *v.* PERCY BATEMAN: JUDGMENT.

IN the Court of Criminal Appeal on Monday last, before the Lord Chief Justice (Lord Hewart), Mr. Justice Salter, and Mr. Justice Fraser, the following judgment was delivered by the Lord Chief Justice:—

The appellant was convicted at the Central Criminal Court before Mr. Justice Shearman of manslaughter, and was sentenced to six months' imprisonment in the Second Division. He appealed by leave against conviction and sentence. This Court, after hearing arguments of counsel, quashed the conviction and intimated that a considered judgment would be delivered at a later date.

The appellant, who is a qualified medical practitioner, was indicted for having on July 30th, 1924, unlawfully killed one Mary Ann Harding. He was called in by the midwife on the night of July 23rd, and found a very unusual and difficult presentation. He administered chloroform and attempted unsuccessfully to effect delivery by the use of instruments. No blame was imputed to the appellant on that account. He then proceeded by using his hands to perform the operation known as "version," using, of necessity, considerable force. He worked at this operation for an hour, and then delivered the child which was dead. In removing the placenta he, by mistake, removed along with it a portion of the uterus. The patient was much exhausted, and the appellant did not expect her to live. He visited her twice daily until the 28th. Although requested by the husband and the midwife to have her removed to the infirmary, he did not remove her until the 28th, on which day he wrote a letter to the superintendent that was alleged by the prosecution to be uncandid. On admission to the infirmary she was found unfit to undergo an operation. She grew gradually weaker and died on the 30th. On a post-mortem examination the bladder was found to be ruptured, the colon wa crushed against the sacral promontory, there was small rupture of the rectum, and the uterus wa almost entirely gone. The charges of negligenc made against the appellant were, in substance, (1 causing the internal ruptures in performing the opera tion of "version," (2) removing part of the uteru along with the placenta, (3) delay in sending the patient to the infirmary. For the defence it was contended that (1) and (2) were, in the difficult circumstances of the case, not inconsistent with a fair degree of care and competence, and that to have moved the patient at an earlier date would only have accelerated her death.

At the hearing of the appeal, counsel for the appellant relied mainly on the following grounds: Misdirection in law, misdirection and non-direction on the facts, and that the verdict was against the weight of the evidence.

Before we deal with the directions of the learned Judge to the jury it is desirable to consider generally the law on this subject. In expounding the law to juries on the trial of indictments for manslaughter by negligence, the Judges have often referred to the distinction between civil and criminal liability for death by negligence. The law of criminal liability for negligence is conveniently explained in that way. If A has caused the death of B by alleged negligence, then, in order to establish civil liability, the plaintiff must prove (in addition to pecuniary loss caused by the death) that A owed a duty to B to take care, that that duty was not discharged, and that such default caused the death of B. To convict A of manslaughter the prosecution must prove the three things above mentioned and must satisfy the jury, in addition, that A's negligence amounted to a crime. In the civil action, if it is proved that A fell short of the standard of reasonable care required by law, it matters not how far he fell short of that standard. The extent of his liability depends not on the degree of negligence but on the amount of damage done. In the criminal court, on the contrary, the amount and degree of negligence are the determining question. There must be *mens rea*. The difference between negligence and gross negligence is illustrated by the case of *Cashill* v. *Wright*, 6 Ellis & Blackburn 891, which was an action against an innkeeper for damages for the loss of the plaintiff's property stolen from him while he was putting up at the defendant's inn. The defendant contended that the loss had been occasioned or contributed to by the negligence of the plaintiff. At the trial the jury were directed that the defence failed unless they thought that the plaintiff had been guilty of gross negligence. On a rule for a new trial, Erle, J., delivering the considered judgment of the Court (Campbell, C.J., Wightman, Erle, and Crompton, J.J.), said: "The other question was as to the alleged misdirection in the direction to the jury that there must be gross negligence to maintain the defence. It does not appear that there was any information given to the jury as to what they were to understand by gross negligence. If they were told to understand by gross negligence the absence of that ordinary care which, under the circumstances, a prudent man ought to have taken, as seems to have been the meaning given to gross negligence in some of the modern cases cited before us, the direction as to the degree of negligence might not have been objectionable; but the legal meaning of gross negligence is greater negligence than the absence of such ordinary care. It is such a degree of negligence as excludes the loosest degree of care, and is said to amount to dolus." The rule was made absolute.

In explaining to juries the test which they should apply to determine whether the negligence, in the particular case, amounted or did not amount to a crime, the Judges have used many epithets, such as culpable, criminal, gross, wicked, clear, complete. But whatever epithet be used, and whether an epithet be used or not, in order to establish criminal liability the facts must be such that, in the opinion of the jury, the negligence of the accused went beyond a mere matter of compensation between subjects and showed such disregard for the life and safety of others as to amount to a crime against the State and conduct deserving punishment.

It remains to consider the application of this principle to cases like the present where death has been caused, in the exercise of his calling, by the alleged negligence of a person professing special knowledge and skill, and a charge of manslaughter is preferred.

The following cases may be cited as illustrating the language in which criminal negligence of this kind has been discussed and explained by Judges in modern times: Hales Pleas of the Crown, 429; *R.* v. *Williamson*, 3 Carrington & Paynes, 635; *R.* v. *Ferguson*, 1 Lewin's Criminal Cases, 181; *R.* v. *St. John Long*, 4 Carrington & Payne, 423; *R.* v. *Spiker*, 4 Carrington & Payne, 333; *R.* v. *Webb*, 1 Moody & Robinson, 405; *R.* v. *Spilling*, 2 Moody and Robinson, 107; *R.* v. *Whitehead*, 3 Carrington and Kirwan, 204; *R.* v. *Crick*, 1 Foster & Finlayson, 519; *R.* v. *Crook*, 1 Foster & Finlayson, 521; *R.* v. *Bull*, 2 Foster & Finlayson, at 202; *R.* v. *Mark and others*, 4 Foster & Finlayson, 353; *R.* v. *Noakes*, 4 Foster & Finlayson, 920; *R.* v. *Chamberlain*, 10 Cox's Criminal Cases, 486; *R.* v. *Spencer*, 10 Cox's Criminal Cases, 525; *R.* v. *Finney*, 12 Cox's Criminal Cases, at page 626; *R.* v. *Nicholls*, 13 Cox's Criminal Cases, 76; *R.* v. *Doherty*, 16 Cox's Criminal Cases, at page 300.

The law as laid down in these cases may be thus summarised. If a person holds himself out as possessing special skill and knowledge, and he is consulted, as possessing such skill and knowledge, by or on behalf of a patient, he owes a duty to the patient to use due caution in undertaking the treatment. If he accepts the responsibility and undertakes the treatment, and the patient submits to his direction and treatment accordingly, he owes a duty to the patient to use diligence, care, knowledge, skill, and caution in administering the treatment. No contractual relation is necessary, nor is it necessary that the service be rendered for reward. It is for the Judge to direct the jury what standard to apply, and for the jury to say whether that standard has been reached. The jury should not exact the highest, or a very high, standard, nor should they be content with a very low standard. The law requires a fair and reasonable standard of care and competence. This standard must be reached in all the matters above mentioned. If the patient's death has been caused by the defendant's indolence or carelessness, it will not avail to show that he has sufficient knowledge; nor will it avail to prove that he was diligent in attendance, if the patient has been killed by his gross ignorance and unskilfulness. No further observation need be made in regard to cases where the death is alleged to have been caused by indolence or carelessness. As regards cases where incompetence is alleged, it is only necessary to say that the unqualified practitioner cannot claim to be measured by any lower standard than that which is applied to a qualified man. As regards cases of alleged recklessness, juries are likely to distinguish between the qualified and the unqualified man. There may be recklessness in undertaking the treatment and recklessness in the conduct of it. It is, no doubt, conceivable that a qualified man may be held liable for recklessly undertaking a case which he knew, or should have known, to be beyond his powers, or for making his patient the subject of reckless experiment. Such cases are likely to be rare. In the case of the quack, where the treatment has been proved to be incompetent and to have caused the patient's death, juries are not likely to hesitate in finding liability on the ground that the defendant undertook, and continued to treat, a case, involving the gravest risk to his patient, when he knew he was not competent to deal with it, or would have known if he had paid any proper regard to the life and safety of his patient.

The foregoing observations deal with civil liability. To support an indictment for manslaughter the prosecution must prove the matters necessary to establish civil liability (except pecuniary loss) and, in addition, must satisfy the jury that the negligence or incompetence of the accused went beyond a mere matter of compensation and showed such disregard for the life and safety of others as to amount to a crime against the State and conduct deserving punishment.

We have now to deal with the alleged misdirection. At the outset of the summing-up the learned Judge directed the jury as follows: "I want first of all to explain the law to you. The law is that anybody that causes the death of anybody else—it does not only apply to a doctor, it applies to motor drivers, railwaymen or signalmen, it applies to a number of people—anybody causing the death of anybody else is criminally responsible. It is equally clear law that no one is criminally responsible for what I call making a mere mistake, and it is really for the jury to draw the line between what is called making a mere mistake, an error of judgment, and doing something which is grossly and palpably wrong. I have only one objection to make to the law as put before you by counsel for the defence, that the man is bound to do the best of such skill as he has. That is not quite accurate. A medical man who practises for profit the medical profession professes skill. He does not come and say: 'I am an unskilled person'—he is engaged and professes skill. Of course, you will understand it is not for every humble man of the profession to have all that great skill of the great men in Harley-street, but, on the other hand, they are not allowed to practise medicine in this country unless they have acquired a certain amount of skill; they are bound to show a reasonable amount of skill according to the circumstances of the case, and you have to judge them on the basis that they are skilled men, but not necessarily so skilled as more skilful men in the profession; and you can only convict them criminally if in your judgment they fall below the standard of skill which is the least qualification which any doctor should have. You should only convict a doctor of causing a death by negligence if you think he did something which no reasonably skilled doctor should have done." The learned Judge then quoted the language used by Chief Justice Tindal in *R.* v. *Ferguson*, above cited, and continued: "You have got to consider if this man, in anything he did, fell below the level which you expect of a doctor—below the degree of skill which you think you have the right to expect of a doctor—by no means the extreme skill everybody knows of, but that degree of skill which you expect from a doctor who attends an accouchement and who is taken to know his business."

In the course of his review of the evidence the learned Judge referred to the law in the following passages: "That is the whole of the evidence with regard to what is called the first part of the case. It is said that this man so treated her that by his treatment he committed all these injuries, he ruptured the womb, he ruptured her bladder in pushing about, and he caused the injuries to her intestines; and in the same way it is said that when he came to pull out the placenta, instead of pulling the placenta out of the womb he caught hold of, not the placenta, but some tear or slit in the torn womb and with a tug, the expression was 'a sharp pull,' he pulled it away. It is said by the Crown that that shows that in doing this, and in pulling out the womb, he was guilty of gross negligence. It is said on behalf of the defence—and they called eminent surgeons—Well, the nurse saw nothing wrong with the way he treated her, although the force was used and necessary, and it was unfortunate. It is said there was no gross negligence, and it is for you, if you feel any doubt, to see that the prisoner gets the benefit of the doubt. But are you satisfied on that that there was gross negligence? The doctors for the defence say this: they say, 'Oh, it is quite reasonable to mistake a tear in the womb for the placenta.' That is entirely a matter for you, and it is a view not entirely accepted by the doctors called for the prosecution, although they agree in cross-examination that after all this working a portion of the womb might be torn, but a reasonably skilful man might know the difference between pulling a womb and something that might be adherent to the inside, and the prosecution call attention to the fact of the steady outflow of blood and say that in pulling out the womb he was guilty of gross negligence, and the defence say it was a very natural mistake in the circumstances of the case." . . . "The Crown first of all say there was gross negligence (and you will not find it unless you are quite satisfied of it) in pulling away the womb at all—in what he did before and in pulling it away. It is suggested by the defence, nothing of the sort, at most and at worst it was a very difficult case, and at most and at worst it was a mistake, and we say it was not negligence; it was the sort of thing that might have happened in this remarkable case." . . . "Passing away from that and summing up the first case, if you think that you are quite satisfied that it was his treatment in tearing away the womb—previous to, and up to, tearing away the womb—you will convict him; if you are not satisfied and think that there was no negligence at all, or if you have a reasonable doubt whether there was gross and culpable negligence up to that point, you will acquit him." . . . "That, substantially, is the case for the Crown on the second part of the case, and they say, substantially, he was guilty of grave, wicked neglect and culpable neglect of duty in not taking some steps to remedy what has been done by his own fault or, if you do not think it was gross negligence, they say he ought to have done something to try and save the woman's life, but he did not do anything because he wished to save his reputation." . . . "These are the historical facts. Do you think, assuming you are satisfied by the prosecution, that in pulling away the womb at all, and the acts preceding that, he was guilty of gross negligence and culpable negligence in causing her death? Then you come to the second head: was he guilty of gross or culpable negligence in accelerating this woman's death by so neglecting her from the time that he knew her uterus had been removed? If you are satisfied that the woman wanted treatment, and from the history of the case, if she had had some treatment, her life would have been prolonged, you will find him guilty; if you have any doubt about it you will find him not guilty. I will remind you of what I have said to you at the outset, that you have to be satisfied, not only that he was guilty of gross and culpable negligence, but that he caused or accelerated her death." . . . "That is the whole of the case. If you are satisfied that either in the way he delivered the child or in the way he acted afterwards he acted with gross negligence and thereby caused her death, you will find him guilty; if you are not satisfied you must acquit him on that part of the case. If you think after the womb had come away his conduct and neglect of her substantially accelerated the date of her death—if you are quite satisfied of that, you will convict him on that part of the case. If you feel any reasonable doubt on either theory you will give him the benefit of the doubt and acquit him."

If the words gross, wicked, and culpable are put aside, this summing-up amounts to a direction to the jury that they must draw the line between mistake or error of judgment on the one hand, and carelessness or incompetence on the other hand. If there was only mistake or error of judgment there is no liability; but if there was any falling short of a fair average degree of care or competence, then there is liability. Such a direction would be complete and accurate on the trial of an action for damages for negligence. It is not adequate on the trial of an indictment for manslaughter. There is, however, in the passages dealing with the evidence, a frequent use of some of the adjectives which have always been employed in explaining criminal negligence to a jury. For this reason, looking at the summing-up as a whole, this Court is of the opinion that there was no misdirection. It is, nevertheless, most desirable that in trials for manslaughter by negligence it should be impressed on the jury that the issue they have to try is not negligence or no negligence, but felony or no felony. It is desirable that, as far as possible, the explanation of criminal negligence to a jury should not be a mere question of epithets. It is, in a sense, a question of degree, and it is for the jury to draw the line, but there is a difference in kind between the negligence which gives a right to compensation and the negligence which is a crime.

The learned Judge was invited to withdraw the first and second charges of negligence from the jury on the ground that there was no evidence to support them. He declined to do so, and left all three to the jury with the instruction that they could convict on all or any of them. The jury returned a general verdict of guilty. In the opinion of this Court there was no evidence to support the first charge, based on the manner in which the accused performed the operation of version. A strong defence was presented on the third charge, and it may well be that the jury relied largely on the first and second charges. If the first had been withdrawn from them, it is impossible to say that they would certainly have convicted. For this reason the conviction could not stand.

Victoria Hospital, Southend-on-Sea.—In his annual report Dr. C. Grant Pugh, medical officer of health of Southend-on-Sea, states that "the most serious problem from the health point of view confronting the inhabitants is the totally inadequate provision in the way of a general hospital due to the lack of financial support given to the Victoria Hospital." It is, he points out, impossible for a hospital with 61 beds and cots to meet the needs of a population exceeding 150,000, and largely increased by summer visitors. The hospital committee find it difficult to raise enough money to maintain even the existing "grotesquely inadequate" accommodation. He points out that unless the committee of the Victoria Hospital can produce a scheme for remedying the inadequacy, either the guardians or the town council will have to do so.

SLEEPING SICKNESS IN AFRICA.

LEAGUE OF NATIONS CONFERENCE.

SLEEPING sickness is a disease of great importance, both from the medical and the economic point of view. Intimately bound up with the problem it presents is that of the tsetse-fly, certain species of which act as vectors for the parasites causing the disease and which, being also the intermediate hosts of trypanosomes producing fatal disease in cattle and other domestic animals, play a most important part in retarding the development of many African colonies. If progress is to be made in combating the dangers of life in these colonies, a closer *rapprochement* between the governments of all the African territories in which sleeping sickness occurs is essential. Uniformity of records and coöperation at frontiers are among the most important administrative measures to be taken, and the powers of medical officers in affected areas must be greatly increased. The system of sanitary passports, largely in vogue throughout French Equatorial Africa and Belgian Congo, is undoubtedly a useful one and could with advantage be brought into more general operation.

The need for such measures is exemplified in the district where the South-Western part of the Bahr-el-Ghazal Province of the Anglo-Egyptian Sudan is in contact both with French and Belgian territory, and also where the Southern Sudan meets the Nile Province of Uganda. The coming and going of infected natives have occasioned local outbreaks of the disease and given cause for grave anxiety. Apart from administrative measures, the further study of the causal agents of the disease, of the means whereby it is conveyed from man to man and from wild animals to man, and of measures of prevention and of treatment is urgently required. Even drugs like "Bayer 205" and tryparsamide have not yet provided a thoroughly satisfactory therapeutic agent, possessing a maximum trypanocidal efficiency with a minimum toxicity and endowed with powers of penetrating the cerebro-spinal system and slaying trypanosomes lodged in the brain substance. But even more important is the study of immunity, and it is with arrangements for the local study of this great problem that the conference held from May 19th to 22nd at the Colonial Office, London, under the auspices of the League of Nations, has been concerned.

This conference, to consider the possibility of sending a special International Commission into Equatorial Africa for the epidemiological study of sleeping sickness, and to arrange for active coöperation of the local sanitary authorities, was the outcome of a decision of the League of Nations to institute inquiries into the scourge of sleeping sickness in Africa, as a result of which an expert committee was appointed with Dr. Andrew Balfour as chairman. The recommendations of this committee were approved by the League Council at Rome in December, 1924. The conference held last week, under the chairmanship of Mr. W. G. Ormsby-Gore, M.P., Under-Secretary of State for the Colonies, was the subsequent step in the agenda. The representatives of the various European countries were: Great Britain: (In addition to the Chairman) Dr. A. G. Bagshawe and Dr. Andrew Balfour. Belgium: Prof. Campenhout, Director of the Public Health Service of the Belgian Colonial Office. France: Prof. Gustave Martin, formerly head of the Sleeping Sickness Mission in Equatorial Africa, Prof. E. Brumpt, and Prof. Mesnil. Italy: Prof. Lanfranchi and Prof. Alessandrini. Portugal: Mr. Aires Kopke. Spain: Dr. Villa and Dr. Rocafert.

CHAIRMAN'S ADDRESS.

At the opening session of the conference, Mr. Ormsby-Gore, in welcoming the delegates, said that the subject which they were called upon to examine was of the greatest importance to the whole future of tropical Africa, and not least to the British Government who had such wide responsibilities in that area. The attention of informed public opinion in England, he continued, was prominently directed to this subject by the great outbreak of sleeping sickness in Uganda about 20 years ago, when the disease caused the deaths of more than 300,000 natives, or roughly one-tenth of the total population of the Protectorate. The campaign against this outbreak necessitated the clearing of the Sese Islands of Lake Victoria and other portions of Uganda of their entire human population. The disease, though less virulent in its incidence in Uganda, was to-day, however, still existent in that country and was a present problem in many other parts of the country, as the speaker had himself seen in the course of a recent extensive tour through Northern Rhodesia, Nyasaland, Tanganyika Territory, Uganda, and Kenya. The disease was also known in the Anglo-Egyptian Sudan and also to a less extent in the British Colonies in West Africa; in fact, wherever the tsetse-fly existed there was always a danger that the disease might become epidemic in character. The report from Northern Nigeria for 1923 revealed an epidemic outbreak of a severe form of sleeping sickness in an area where its record had not been previously noted.

Turning from the British Colonies, there was probably no part of Africa to-day where the problem was more serious than in the Belgian and French Congo; very large areas were marked as sleeping sickness areas on the maps drawn up by the Expert Committee appointed by the Health Committee of the League of Nations in 1922. The French Colonies in West Africa were also affected, and one of the most important pieces of work in connexion with the problem had been effected in the Portuguese island of Principe. The disease to-day was the cause of grave anxiety in the Spanish island of Fernando Po. The speaker pointed out that the tsetse-fly occurred in belts of varying sizes practically throughout tropical Africa from Senegal on the north-west to Zululand on the south-east. Areas of special intensity were found in practically all the intervening countries. At least one-half of the total area of the mandated territory of Tanganyika was under tsetse-fly, and within its borders were found many of the principal varieties of this pest.

The Present Problem.

Mr. Ormsby-Gore then outlined the steps which had been taken to combat sleeping sickness, commencing with the International Conference held in London in 1907. Since that time, he continued, much fresh knowledge had been accumulated by workers of different nations, one of the most important discoveries being that made by Dr. Kleine, that a developmental cycle of trypanosome occurred in the tsetse-fly. Investigations of French, German, Belgian, and American scientists had been devoted towards the treatment and prevention of the disease by the use of drugs. Even so our present knowledge, said the speaker, was far from complete and further research even on these limited aspects of the problem was needed. The problem was, however, not confined to the medical treatment of the disease but, in the Chairman's words, "faced as we are by the vast extent of the infested regions, the difficulties presented by Nature and by our having to deal with the untutored and unclad natives and the prohibitive cost of introducing any large number of specially trained Europeans into tropical Africa, with its immense transport difficulties, our efforts have been often ineffective."

To free Africa from sleeping sickness, he continued, we required the services of entomologists, protozoologists, veterinary and medical scientists, and men of administrative and zoological experience. We needed not only the brain of the scientist and the work of the laboratory, but also that of the trained native administrator to apply the knowledge once it was obtained. In this country we were particularly pleased that the League of Nations had taken up this question, and we were glad to learn of the interest which was being displayed by the Rockefeller Institute and other bodies in America in this problem.

RECOMMENDATIONS OF THE CONFERENCE.

As the result of the discussions held during the session of the conference, the delegates unanimously decided to make to the Council of the League of Nations and to their respective Governments the recommendations which we give below in abstract. They read as follows :—

Administrative Measures.

In order to ascertain what zones are affected, the prevalence and distribution of tsetse-fly, the migration and movements of the populations, and the different methods of control adopted in various countries, the conference recommends :—

1. That facilities should be afforded for periodic official conferences between administrative and medical officers in charge of the campaign against sleeping sickness on both sides of the boundaries between infected countries.

2. That special agreements be concluded between lcalo administrations for rapid and regular interchange of all epidemiological intelligence and information regarding measures for control on both sides of the frontier.

3. That the recommendations of the chief of the medical service or his representative in sleeping sickness areas should be binding on the local administrations.

4. That a medical and health service be provided, including both medical officers and auxiliary staff, proportionate to the number of the population infected and the extent of the district to be inspected ; adequate administrative staffs should be available in these regions and particularly in the neighbourhood of frontiers.

5. That in sleeping sickness areas the medical officers should be given magisterial powers regarding the application of all measures in connexion with the preventive campaign ; that the system of sanitary passports for the native population in the affected areas should, where practicable, be adopted as an effective means of reducing inter-frontier traffic to a minimum, and that all information available regarding sanitary passports should be collected and the League of Nations Experts Committee requested to prepare a draft sanitary passport.

The conference wishes to emphasise more particularly the necessity of a uniform method of recording statistics relating to morbidity and mortality of sleeping sickness as well as a uniform method of preparing maps showing the prevalence of the disease, the sites of the sleeping sickness camps, sectors of prophylaxis, and the distribution of the various species of glossinæ. For this purpose the conference recommends :—

1. That the Experts Committee should study this question and present a recommendation to the Health Committee of the League of Nations for submission to the Governments concerned, including a uniform method of laboratory diagnosis.

2. That wherever practicable measures for the establishment of areas freed from populations should be taken on both sides of the frontier in order to facilitate the control of native traffic.

Special Studies and Investigations.

The conference, having examined the proposals contained in the two reports of the League of Nations Experts Committee on Sleeping Sickness in Equatorial Africa, as well as the recommendations made by the Committee during the conference, recommends that an international commission should be entrusted with the duty of investigating the problems referred to under—

(1) The existence of any human immunity against trypanosomiasis, the nature of such immunity, and the factors which determine it ; (3) the functions of wild and domestic animals as breeding-grounds for the virus ; (4) the relations between trypanosomiasis gambiensis and trypanosomiasis rhodesiensis ; (5) the testing of precipitins applied to the blood in the alimentary canal of the tsetse-fly ;

of the recommendations of the Experts Committee.

Investigations on the subject referred to above are being already carried out in the institutes of the several African countries, and the conference believes that it would be of the greatest importance if the methods of research and the technique of investigation were coordinated as between the various institutes, and that an international commission formed of representatives of the various national institutes would find valuable opportunities for scientific collaboration.

Research in Uganda.

The conference, after having considered other territories, is of opinion that Uganda and the regions in the neighbourhood of Lake Victoria represent the territory most suited for the study of the problems selected. Most valuable research work has been carried out for several years at the laboratories at Entebbe, under the competent and distinguished leadership of Dr. Lyndhurst Duke. In addition, extensive field work has been carried out by the medical services of Uganda and by the administration of the adjoining territory of Tanganyika. The conference recommends therefore :—

1. That an inquiry be made as to whether the Government of Uganda would be prepared to offer the hospitality of their laboratories at Entebbe for the work of such a Commission.

2. That the Commission be placed under the presidence and control of Dr. Duke and that it should consist of a few workers from the institutes of African Powers. The conference also believes that the collaboration of Dr. K. Kleine will be of great service to the Commission. The hospitality of the Entebbe Institute will be invited for a period of 12 months, at the end of which the Commission will present a special report to the League of Nations Experts Committee.

The Commission would begin by studying, under Dr. Duke's guidance and control, the research methods and laboratory technique at the Entebbe Institute and its field laboratories, as well as the field work and measures taken against sleeping sickness in the Protectorate of Uganda and the infected districts of Tanganyika. The field work in regard to the control of the tsetse-fly undertaken by Mr. Swynnerton in the Tanganyika territory will also be studied. The Commission will then engage in joint laboratory investigations as to the methods of work which are most suited for research into the several problems referred to it by this conference.

The conference estimates that the expenditure would amount to some £10,000, including salaries of local scientific personnel, the foreign members and laboratory assistants, as well as travelling and other general expenditure. The conference decides to ask delegates to recommend to their Governments to contribute to a common pool for meeting part of this expenditure, while it is anticipated that the Governments will continue to pay the salaries of the medical officers and other workers who take part in the work of the Commission. The conference recommends strongly that the Governments should obtain the allocation of a credit of at least £3000 in the budget of the Health Organisation of the League of Nations for 1926, and it hopes that funds may also be provided by the scientific research organisations of certain countries.

THE WORK OF THE NEW COMMISSION.

It is suggested that the Commission might conveniently meet at Entebbe at the end of December, 1925, or in January, 1926, its mandate terminating on Dec. 31st, 1926. The limitation of the period of work for the Commission at Entebbe has doubtless been deliberate. The method of study of sleeping sickness problems by means of an International Commission is quite a new idea so far as tropical Africa is concerned, and it is therefore frankly of an experimental nature. In any case the association of a number of workers of different nationalities for the elucidation of difficult and intricate problems is perhaps more likely to be profitable if their deliberations are not allowed to extend over too long a period.

The choice of Entebbe, Uganda, for the place of investigation will be welcomed, for not only is it a place where immunity can be studied with advantage but where attention can be directed to certain other problems urgently requiring solution. These are: (1) The relation of wild and domestic animals to the disease in man—in other words, the rôle they may play as reservoirs of infection, as modifying strains of human trypanosomes, as affording pabulum for the tsetse-fly. (2) The vexed question as to how *T. gambiense* stands in relation to *T. rhodesiense*. (3) The feeding habits of glossinæ as determined by the application of precipitin tests to the blood in the alimentary canal of the fly. In Uganda, moreover, sleeping sickness has apparently been mastered by the removal on a large scale of an infected population from the endemic areas and repopulation of the abandoned areas is now proceeding. Cases of human sleeping sickness may, however, be found not far away in Kavirondo, while the large scale preventive measures against the tsetse-fly, organised by Mr. Swynnerton, can be inspected by the Commission without travelling any great distance. Dr. Lyndhurst Duke, the Chairman of the Commission, is one of the foremost British workers in this field; he and his colleagues Dr. Lavier, Dr. Van Hoof, and Dr. Kleine, with a biochemist and an entomologist still to be appointed, will start organising their work as soon as those recommendations are approved by the Governments and by the Council of the League.

SALARIES IN THE PUBLIC HEALTH SERVICE.

THE British Medical Association has just issued a circular letter to local sanitary and other authorities, containing a schedule of minimum commencing salaries recommended for their adoption as a standard. The scale is the outcome of protracted effort by the Society of Medical Officers of Health with the assistance of the B.M.A., to obtain a standard of salary sufficient to attract men and women with good qualifications into the public health service and to retain their services there. Ominous signs have of late not been wanting, the letter states, that the right kind of men and women are not being attracted to the service, and that some of the most suitable officers in it are seeking ways and means of getting out. A draft scale of salaries was drawn up by a committee of the Society of M.O.H.'s in November, 1919, and was fully discussed at the annual meeting of the B.M.A. at Portsmouth in July, 1923, when the schedule was printed in full in THE LANCET (1923, ii., 187). A number of concessions have since been made, and now the Ministry of Health regards the scale as reasonable, and it has been commended as a useful guide in fixing salaries by the Association of Municipal Corporations. Agreement is not yet complete, and there are notable lacunæ, but it is a fact that the scale salary has already been offered without question by a number of authorities who had awaited the result of negotiations before filling vacancies.

Scale of Minimum Commencing Salaries for Whole-time Chief Medical Officers of Health and Medical Officers of Other Grades Recommended for Adoption as a Standard by Local Authorities.

RESIDENT MEDICAL OFFICERS.

Minimum commencing salaries per annum, £350 plus emoluments.

Definition: These are medical officers employed in hospitals, sanatoria, or other institutions without the responsibility for the work of other medical officers.

Note.—Where the appointing authority limits the appointment to a term not exceeding one year and not renewable, this salary shall not apply, nor shall it apply to officers without previous professional experience.

MEDICAL OFFICERS EMPLOYED IN DEPARTMENTS.

(Working directly under a senior medical officer.)

Minimum commencing salaries per annum, £600.

Definition: These are medical officers without responsibility for the work of other medical officers, but who shall have had at least three years' experience in the practice of their profession subsequent to obtaining a registrable qualification. One only of these years may be spent in the whole-time service of a local authority on a probationary basis at a lower salary than the minimum of £600 per annum. The salary during such probationary service shall be at the rate of not less than £500 per annum.

DEPUTY OR CHIEF ASSISTANT MEDICAL OFFICER.

(Hospitals, sanatoria, or other institutions or departments.)

Minimum commencing salaries per annum, a salary equal to 60 per cent. of salary of medical superintendent or senior medical officer in charge, but not less than the salary of a medical officer employed in a department.

SENIOR MEDICAL OFFICERS

(not being medical officers of health) in charge of services or departments—e.g., port sanitation, school medical service, tuberculosis, mental deficiency, maternity and child welfare, venereal disease, or any other similar service or department or combination thereof—and medical superintendents of hospitals, sanatoria, or other institutions.

Minimum commencing salaries per annum, £750 to £1100 according to responsibility and scope of department, regard being had to the relation of the officer's salary to that of the medical officer of health.

CHIEF MEDICAL OFFICERS OF HEALTH.

(Outside London.)

A = County boroughs, boroughs, urban and rural districts, and combined districts. B = County councils.

Population.		Minimum commencing salaries per annum.	
		A.	B.
		£	£
Not exceeding	50,000 ..	800– 900	—
" "	75,000 ..	900–1000	800– 900
" "	100,000 ..	1000–1100	900–1000
" "	150,000 ..	1100–1200	1000–1100
" "	250,000 ..	1200–1400	1100–1200
" "	500,000 ..	1400–1600	1200–1400
" "	750,000 ..	1600–1800	1400–1600
Exceeding	750,000 ..	1800	1600–1800

CHIEF MEDICAL OFFICERS OF HEALTH.

(Metropolitan boroughs.)

Population.		Minimum commencing salaries per annum.
		£
Not exceeding	150,000	1000–1200
" "	250,000	1100–1400
Exceeding	250,000	1400–1800

Notes.

1. In cases where a local authority appoints a deputy or assistant medical officer of health the salary should bear an appropriate relation to the salary of the chief medical officer of health and the other medical officers in the service of the authority. By deputy or assistant medical officer of health is meant a medical officer duly appointed as deputy or assistant M.O.H. by the authority to assist the medical officer of health in the general administration of the health department and the carrying out of the various Acts, by-laws, orders, rules, regulations, &c., required to be, or usually administered by the medical officer of health; the title deputy or assistant medical officer of health to be limited to medical officers carrying out these general duties.

2. Where in the case of a particular appointment, whether of a medical officer of health or a senior medical officer, the local authority assigns a figure in the scale which the British Medical Association thinks inappropriate the Ministry of Health has promised to use its good offices by arranging for a joint discussion between the parties concerned at the Ministry.

3. Population means population at the latest annual report of the Registrar-General.

Conditions Applicable to All Appointments.

(*a*) The salaries to be fixed are consolidated salaries inclusive of bonus.

(*b*) There will be a periodical review of salaries by the local authorities and suitable increments of salary will be given for proved ability and satisfactory service.

(*c*) Travelling expenses and other reasonable expenses properly incurred in the performance of the duties will be paid in addition to salary.

(*d*) No existing officer is to be prejudicially affected.

PORT MEDICAL OFFICERS.

(Directly responsible to a port sanitary authority.)

Minimum commencing salary per annum, £800.

Suggested Salaries for Combined Posts, &c.

Where two or more districts combine to appoint a medical officer of health to serve under a joint committee, such medical officer of health being permitted to accept part-time duties—e.g., as tuberculosis officer, school medical officer, &c.—under the county council, the combined remuneration should be not less than the minimum commencing salary of a whole-time M.O.H., as indicated by the population of the combined areas.

Where an assistant M.O. under a county council is allowed to become a district M.O.H. for a definite proportion of his time—e.g., one half-day per week—such assistant M.O. should receive remuneration at the rate of £50 per annum for each half-day per week allocated for his duties as district M.O.H., and that his salary as assistant M.O. under the county council should be reduced by one-eleventh for each half-day per week that he is serving as district M.O.H.

The scale deals only with minimum salaries, but the view of the Association is that increment of salary should be at the rate of 5 per cent. per annum (after three years satisfactory service) rising to not less than 25 per cent. above the commencing salary. In placing existing officers in accordance with the scale, it is assumed that years of service and merit will receive recognition. The Association refuses to recognise any differentiation of salary on account of sex.

Public Health Services.

SCHOOL MEDICAL SERVICE.

STATISTICS from three school medical reports for 1924 are given in the following table :—

Name of district.	No. on roll.	Av. elem. school attendance.	No. examined in "code" groups.	Special examinations or inspections.	Percentage of children found on routine examination requiring treatment.*
Shrewsbury	4209	3756	1147	7823	7·5
Radcliffe ..	2978	2668	917	2267	24·1
Guildford ..	2998	2711	953	268	15·5

* Excluding cleanliness and dental defects.

Shrewsbury.

Dr. Gordon Smith, in his report to the borough council of Shrewsbury, points out the insanitary condition of many of the schools, some of which have been condemned by H.M. inspector. The educational, no less than the physical, well-being of children is so dependent on good environmental conditions that the quick remedying of insanitary conditions in all schools would be a sound investment on the part of all local educational authorities. The small percentage of defects found (7·5) is explained as being due to the work of the child welfare scheme being well carried out and by the existence of an efficient school clinic, where the treatment is carried out by the school medical officer in addition to his duties as M.O.H. Dr. Smith does not disguise the considerable difficulty he has in carrying out unassisted his ever-increasing duties.

A feature of the report is the number of statistical tables showing the incidence of defects amongst the various age-groups. In the malnutrition table it is seen that 7·1 per cent. of the 8-year old children are below normal as against 12·5 per cent. of the entrants and 17·8 per cent. of the 12-year olds. These figures indicate rather a high percentage of poor nutrition. The lessened incidence in the 8-year old group is interesting as it is at variance with most findings at this age. "Many of these badly nourished children are seen at the clinic and are difficult to deal with. Some are obviously underfed. It would be a great advantage if suitable cases could be supplied with a daily ration of milk or cod-liver oil. . . . Many of the teachers would be villing to issue the milk at schools. . . ." The local education authority would avoid reproach by putting into operation the Education (Provision of Meals) Acts, 1906–14.

Dental defects were found in 64·3 per cent. of children at routine medical inspections while only 29·8 per cent. were found by the school dentist at his inspection—from these figures it would appear that the dentist picks out only the worst cases for treatment. The percentage of parents present at routine examinations (50 per cent.) is not high and would indicate rather a lack of interest in the good work.

Radcliffe.

Dr. J. M. Gibson's well-written report presents many points of interest and much care has been taken in its compilation. The various public health services are now coordinated with the school medical service, and the health visitor supervises and keeps records of debilitated children under school age and when necessary treatment is given at the school clinic. The difficulty of efficient school ventilation is commented on and the importance of fresh moving air is emphasised, as is the necessity for well-lighted, bright, and clean rooms. The figures for uncleanliness of the head and body show a steady improvement from 590 in 1921 to 185 in 1924. The percentage of visual defects in not high—4·2 per cent. were referred for refraction, and it is satisfactory to note that 101 cases out of 107 recommended for glasses obtained them.

Tables are given showing the monthly incidence of scarlet fever and diphtheria in the various schools and one showing the weekly incidence and school distribution of measles during September–December, 1924. In his pertinent observations on infectious disease, Dr. Gibson concludes that, in such a district as Radcliffe, school closure has no effect in preventing the spread of infection; on the contrary, measles can be more effectively controlled and the children's interests better safeguarded by keeping the schools open. He rightly says that the help of the teachers is essential, and is readily given, for the early recognition and consequent isolation of suspicious cases, especially as parents are not acquainted with the early signs of the disease. There are no facilities for open-air education in the district, but in many places open-air classes are held in elementary schools with excellent results.

In a special inquiry it was found that 12 children had a mental retardation of two to three years, while 27 had a mental age (Binet-Simon) of more than three years lower than their respective chronological years. There would thus appear to be sufficient candidates for a special school; pending the formation of such a school many of these children might benefit from instruction in special backward classes in the elementary schools.

Dr. Gibson records his thanks for the cordial and valued coöperation of the local medical practitioners with the school medical staff.

Guildford.

In the relatively small area of the borough of Guildford, Dr. R. W. C. Pierce, the S.M.O., is fortunate in having Dr. A. Pimm as medical inspector to assist him in his school work. From the above table it will be seen that there were comparatively few special examinations (40) and re-inspections (228). Special cases are usually referred by parents, teachers, nurses, or school attendance officers, and constitute an important feature of school work, as most of the children so referred are either suffering, or suspected to be suffering, from some definite illness, and the medical examination of such children gives confidence and encouragement to the parents. One such case successfully treated often does more good than the examining of many routine healthy children. No provision exists for open-air education, but teachers are urged to hold playground classes for debilitated anæmic children.

The medical inspector apparently only recommends for treatment the very worst cases of dental caries, as only 61 were so referred out of a total of 1221 examined. Whereas the dentist referred 1040 out of a total of 1365 inspected, and of those referred for treatment by the dentist 688 obtained it. The number of exceptional children is too small to make the provision of special schools readily feasible. Five such children are maintained in outside institutions, but some special classes might be organised for the education of 18 mentally deficient children who are at present in elementary schools.

The school nurses seem to be hard-worked and a great deal of their time is spent in general welfare work which has the incidental advantage of gaining for them and their work the sympathy of the parents. Mention is made of valuable voluntary workers, and it is hoped that their numbers will be increased or some other help obtained, for it is scarcely desirable that such work should fall upon the teachers though their interest is essential to the success of the medical work.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED MAY 16TH, 1925.

Notifications.—The following cases of infectious disease were notified during the week, namely:—Small-pox, 157; scarlet fever, 1702; diphtheria, 807; enteric fever, 56; pneumonia, 963; puerperal fever, 59; cerebro-spinal fever, 9; acute poliomyelitis, 1; acute polioencephalitis, 1; encephalitis lethargica, 70; dysentery, 4; ophthalmia neonatorum, 106. There were no cases of cholera, plague, or typhus fever notified during the week. The number of small-pox cases showed a decrease of 5 from the number for the preceding week.

Deaths.—In the aggregate of great towns, including London, there were 3 deaths from enteric fever, 83 from measles, 12 from scarlet fever, 88 from whooping-cough, 31 from diphtheria, and 58 from influenza, as compared with 98, 100, 139, and 102 in the four preceding weeks. In London itself the deaths from influenza numbered 4, from whooping-cough 21, and from diphtheria 4.

Obituary.

NORMAN VEITCH CUNNINGHAM LOTHIAN, M.C., M.B., CH.B. GLASG., D.P.H., D.T.M. & H. CAMB.

WHILE travelling from Beit Mari to Beirut in Syria on May 22nd Dr. Norman V. C. Lothian, epidemiologist of the Health Section of the League of Nations and member of the League of Nations Malaria Committee, was killed as the result of a motor-car accident, which also caused the death of two other members of the committee, Dr. Samuel Darling, U.S.A., and Mlle. Besson, France.

Dr. Lothian graduated in Arts, Science, and Medicine at the University of Glasgow, obtaining the M.B., Ch.B. in 1912. He continued his studies in London and New York, later in 1919 gaining the Cambridge Diploma of Public Health and the Diploma of Tropical Medicine and Hygiene. On qualifying in medicine he joined the Royal Army Medical Corps, where he specialised in hygiene, attaining the rank of major. His many papers in the *Journal of the Royal Army Medical Corps* bear evidence to his ability and to the readiness of his seniors to profit by it. Thus he was asked to prepare "a historical inquiry into the load carried by the soldier of various periods,"[1] when he showed that the soldier should not be asked to carry more than 33 per cent. of his weight; the mule carries 32 and the horse 28 per cent. only, and weights over 33 per cent. destroy the marching power of the soldier and lose battles. Other papers include: Purification of Water on Field Service (Trans. Brussels Internat. Conf. of Military Surgeons), Note on the Rate of Marching and the Expenditure of Energy in Man (with Cathcart and Greenwood), *Journal R.A.M.C.*, 1920; the Activated Sludge Method of Sewage Disposal, ibid., 1921; Chlorination of Water in Galvanised Iron Vessels (with A. R. Ward), ibid., 1922.

For the past two years he had been associated with the League of Nations, and from the British member of the Health Committee of the League we have received the following appreciation: "The tragic death of Dr. Norman Lothian will come as a great shock to the little band of medical officers of different nationalities who form the Health Section of the Secretariat of the League of Nations at Geneva. Dr. L. Rajchman and his colleagues had gained some two years' experience of Dr. Lothian's great capacity and untiring industry. These qualities, combined with a most attractive personality, had gained for him the highest regard and respect, not only of his colleagues on the Secretariat, but also in special measure of the members of the Health Committee and the public health officers of the many countries which it was his duty to visit. Dr. Lothian travelled extensively with the special missions of the League, particularly that on malaria, of which he was secretary, and for which he had quite recently drafted some invaluable reports. He accompanied the "interchange courses" of foreign public health officers which are now a regular part of the programme of the Health Organisation at Geneva. Wherever he went he showed the same high ideal of duty and industry; he was ready for every need or difficulty, and his modesty and charm endeared him to all. With this aptitude and with the quite exceptional experience of sanitary administrative measures and of the persons responsible for them in different countries, a great future had seemed to be before him in the sphere of international public health."

JOHN THOMAS GRAHAM, M.D., C.M. GLASG., M.R.C.S. ENG.

Dr. John T. Graham, who for 35 years was medical officer of health for Perthshire, died at his residence in Perth on May 20th, after a short and sudden illness. A son of the Rev. Dr. Robert Graham, he was born at Abernyte in the Carse of Gowrie in 1853. He studied medicine at Glasgow University and at St. Bartholomew's Hospital, London, qualifying M.B., C.M. Glasg. in 1874 and M.R.C.S. Eng. the following year. In 1878 he obtained the M.D. of Glasgow. Dr. Graham began his professional career in general practice in Perth, and in 1890 was appointed first medical officer of health for the county on the passing of the County Councils Act. He was also chief tuberculosis officer for Perthshire.

Dr. Graham was well known throughout the county, where his abilities as a public health administrator, together with the tact he always showed in carrying out his duties, won for him the confidence and respect of fellow medical practitioners and public officials. Dr. Graham showed a keen interest in public affairs, and at the time of his death was chairman of the Perth Sick Poor Nursing Association. Apart from medical and public work, he devoted much of his spare time to the study of mechanics and electricity.

An old friend and colleague, "R.S.," sends us the following appreciation: "When Dr. Graham began his professional life in the late seventies specialism was only in its infancy, but as a member of the visiting staff of the Perth Royal Infirmary he had opportunities of developing his surgical instincts, and his colleagues learnt to trust both his judgment and manual dexterity. He was a good operator and would probably have achieved distinction had not circumstances diverted his talents in another direction. Abandoning general practice, he became full-time medical officer of health, although he relinquished with regret the surgical and obstetrical work in which he had established an enviable record. The change was probably a wise one, since more than one severe illness had somewhat impaired a powerful physique. To his new duties he brought the same devotion and good sense displayed in his former sphere. So passes away one of the old school, a fine type of the practitioner. As a friend and counsellor he will be greatly missed."

Dr. Graham is survived by his widow and two sons, one of whom is in the medical profession.

THE trainees and families at the Devon and Cornwall Ex-Service (Tuberculosis) Colony, Plymouth, presented a gold-mounted fountain pen to Dr. F. G. Bushnell on May 21st on the severance of his association with Efford Camp.

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[1] Report on Health of the Army for 1921, p. 14.

THE GENERAL MEDICAL COUNCIL.

SUMMER SESSION.

PRESIDENT'S ADDRESS.

THE summer session of the General Medical Council was opened on May 26th, when Sir DONALD MACALISTER, the President, delivered his address.

He began by paying a tribute to the late Sir Clifford Allbutt as a leader in many departments of medicine, pre-eminent in his mastery alike of its literature, its science, and its practice, and by offering the Council's good wishes to Sir Humphry Rolleston, his successor in the Cambridge chair. He also recalled the valuable work, as inspector of qualifying examinations in medicine, of the late Dr. H. H. Tooth, whose recent death left a memory of assiduous and unselfish labour for worthy ends. They would, he said, miss the presence of Mr. E. B. Turner, whose vigorous fluency of address and intimate acquaintance with divers sides of medical life and practice had often given colour to grey debates. He welcomed his successor in the English representation, Dr. H. B. Brackenbury, an experienced medical statesman of approved loyalty and wisdom.

Medical Education and Registration in the Irish Free State.

In February last, Sir Donald MacAlister continued, an Act was passed by the Free State Legislature, which in effect provides that in Southern Ireland the Council's constitution and powers, and the powers and responsibilities of its universities and corporations, shall, so long as the Act is operative, continue to be regulated by the Medical Acts, as they were regulated before the Irish Free State was established. It is, of course, open to the Free State, if it thinks fit, to renew the Act for a further period before its expiry in February, 1926. No similar Act has been passed relating to the dental profession, and accordingly the jurisdiction of the Council and of the Dental Board over dentists in the Free State has come to an end. I have not learned that any local regulation of the dental profession has been established in its stead. It still remains, for the complete validation of the Council's powers, and of its acts in the interim period, that complementary legislation should be adopted in this country. We are informed by the Privy Council that the necessary Bill has been drafted and will shortly be laid before Parliament.

Medical Reciprocity with Italy.

The question of re-establishing reciprocity, interrupted by recent legislation to the detriment of British medical men desirous of practising in that country, has been the subject of much correspondence during the recess. At one time it appeared that, owing to the unexplained delay of the Italian authorities in concluding the "special agreement" required by the new law, it would be necessary to rescind the Order in Council which applies the Medical Act of 1886 to Italy. But an intimation by the Executive Committee to that effect seems to have had a useful result; for we have received a telegram sent by H.M. Ambassador at Rome, stating that the agreement with Italy was signed on Thursday last, May 21st, and that the signed text was on its way to London

Dominion Reciprocity.

The Province of Saskatchewan, whose recent enactment has made it impossible for practitioners on the British Register to obtain provincial registration, while Saskatchewan practitioners still retain the privilege of registration upon the Colonial List and so of practising in this country and in British possessions oversea, has sent a reply expressing the views of its medical council. It is to the effect that there is no desire to retain British reciprocity if that involves inter-provincial reciprocity, and reciprocity with countries other than Great Britain. The Executive Committee have therefore felt constrained to represent to the Lord President of the Council that the conditions under which the Order in Council of 1915 was made *have ceased to be observed by Saskatchewan*, and that accordingly it is just and expedient that the Order should be forthwith rescinded.

Correspondence with the Province of New Brunswick, where a somewhat similar question has been raised, appears to indicate that inter-provincial differences and misunderstandings are responsible for the "current discontents." The local authorities, however, plead for further consideration of the question, and deprecate the rescission of the reciprocity Order until that consideration has been given. The Executive Committee have no desire to precipitate matters with the Province, and have given instructions for a reply to the Provincial authorities, which shall make it clear that we agree in our desire that reciprocity with the Dominion as a whole should take the place of the present agreements with the provinces separately, so soon as the provisions of the Canadian laws render this practicable. Dominion reciprocity has long been the aim of the Council. It would bring with it a greater uniformity of provincial standards, and the elimination of local difficulties between neighbouring provinces, with which the Council cannot effectively concern itself.

India.—Channel Islands.

In India the progress towards a satisfactory system of medical instruction and examination in the Universities of Bombay and Lucknow, as reported by the official inspector, has justified the Executive *Committee in continuing the conditional recognition* of their degrees until June 30th, 1926. The Committee have not yet found any grounds for reconsidering the position of the University of Calcutta, whose degrees are not now registrable in the Colonial List.

Those ancient domains of the Crown, Jersey and Guernsey, have, by a new Medical Act, dated March 10th, 1925, brought their law into harmony with that of the adjacent islands of Great Britain and Ireland by requiring that practitioners, to be legally qualified, must be registered in the Medical Register. They have, moreover, set these islands a good example by prohibiting, under penalty, any person who is not legally qualified from practising medicine or surgery.

Pharmacopœial Conference.

The International Conference on the Unification of Pharmacopœial Formulæ is to be held in Brussels in September. The Government will be represented by four delegates, of whom our colleague, Sir Nestor Tirard, is one. I learn with gratification that he has been asked by the Government to act as chairman of the British Delegation. The Government has adopted the reserves regarding the subjects to be discussed, and the conclusions that may be reached, which were suggested by the Pharmacopœia Committee.

Dental Examinations.

The Dental Education and Examination Committee will present a *report on the inspection* by Mr. J. Howard Mummery, C.B.E., of the qualifying examinations in dentistry and dental surgery held during the past two years. It is good to learn that all the examinations have been reported "sufficient." In certain instances the inspector has made suggestions towards improvement in matters of detail. These have been communicated to the several examining bodies, and it is reported by the inspector that they have been accepted, and in some cases are already in operation.

Number of Medical Students.

This time last year, Sir Donald MacAlister continued, I commented on the fall in the number of medical students registered—namely, from 1833 in 1922 to 515 in 1923. The sudden decline I thought to be more apparent than real, attributing it to the recent introduction of a pre-registration test in elementary physics and chemistry. This test many students would not pass, and so could not register, until the end of their first term, at least, after leaving the secondary schools. The explanation would seem to be sound, for in 1921 the registrations were nearly doubled, reaching 1043 by the end of the year. As the working of the new regulation is better understood in the schools, and as the general and scientific education of intending medical students is brought up to the higher standard now required, there is little doubt that the number of qualified entrants on the medical curriculum will approach the pre-war figure of 1300 or 1400, a number sufficient to supply the needs of the country for qualified practitioners.

The total number of new registrations in the Home List of the Medical Register in 1921 was about 2566, or about 330 more than in the previous year. This increase reflects the very large entry of students in the years immediately following the close of the war. The steady decrease in that entry since 1919 will correspondingly reduce the additions to the ranks of the profession, and it is highly probable that in three or four years the annual increment to the Register will fall to pre-war proportions.

Finance.

As the income of the General and Branch Councils is mainly dependent on registration fees, it is not surprising that the receipts for the year have been considerably augmented. The expenditure has remained nearly stationary, and there is therefore a surplus on the total account of more than £7000. The treasurers have thus been able to provide for exceptional outlays on elections, inspections, and visitations, fresh issues of the British Pharmacopœia, the possible extension of the lease of the Council's buildings, the establishment of an orderly system of pensions for the office staff, &c., and also to lay up modest reserves for other irregularly recurring charges, without drawing on accumulated capital. These wise precautions will serve to stabilise the Council's finances for some time to come, even if the second half of the present decade is less prosperous than the first. We have no margin for lavish expenditure; but the careful husbandry of the Finance Committee will enable us to meet without hardship any expense that is really necessary for efficiency.

A Presidential Gift.

Before I conclude, said Sir Donald MacAlister, may I offer for the acceptance of the Council the decorated window, designed by Dr. Anning Bell, R.A., which, with the kind assent of the Executive Committee, I have ventured to instal temporarily behind this chair? While, from the material side, it may help to brighten the sombre tints of the urban landscape over the way, and shield you from the rare importunities of the western sun, I hope that from the symbolic side it may help to preserve the remembrance of those who have been honoured by your confidence as Presidents of the Council, including the latest and longest borne with, your devoted and grateful servant.

The adoption of the address was moved by Sir Isambard Owen, seconded by Sir Norman Walker, and was carried with acclamation. The Council then proceeded to the consideration of three penal cases reported by the Dental Board of the United Kingdom, and thereafter received reports from the Dental Education and Examination Committee, submitted by Sir James Hodsdon. After the election of Executive and Dental Committees, and of the Penal Cases Committee, the Council then considered six penal cases which had been adjourned at previous meetings.

DAVID ELDER INFIRMARY AT GOVAN.—Plans for the building of this infirmary have now been approved and its erection will shortly be begun. The late Mr. Alexander Elder, of Liverpool, bequeathed £100,000 for the purpose in memory of his father and mother.

Correspondence.

"Audi alteram partem."

EFFECT OF SODIUM THIOSULPHATE ON THE THERAPEUTIC POWER OF ARSENOBENZOL COMPOUNDS.

To the Editor of THE LANCET.

SIR,—*In a discussion on the toxic effects of arsenobenzol compounds, which was held by the Medical Society for the Study of Venereal Diseases on April 24th* (THE LANCET, May 2nd, p. 926), I took the opportunity of saying that I had been wrong in an opinion expressed in the "Medical Annual" for 1925 (p. 441) that the injection of sodium thiosulphate simultaneously with arsenobenzol compound might act as an antidote which would protect the spirochæte of syphilis as well as the patient's tissues.

After I had returned the proofs of my article in the "Medical Annual" I thought it advisable to put this surmise to the test, and asked Dr. H. H. Dale, F.R.S., *to say if the mixture of* "914" with sodium thiosulphate *raised or lowered the therapeutic dose of* arsenobenzol *as tested by its effect in causing the* disappearance *of trypanosomes from the blood of* experimental animals. *Dr. Dale* kindly permits me to quote from his letter to the effect that "so far as our experimental trials have proceeded, there is no indication that dissolving the neosalvarsan preparations, before injection, in a 2·5 solution of sodium sulphate has any deleterious effect on the therapeutic action of the particular preparation on trypanosomiasis in mice."

Acting on this, I asked Dr. P. A. Clements to ascertain in the V.D. Department at St. Thomas's Hospital if a solution of "914" in 0·6 g. sodium thiosulphate interfered with the effect of the arsenobenzol compound in causing the disappearance of spirochætes *from the serum of syphilitic lesions. Dr. Clements's observations support Dr. Dale's* experimental *evidence in showing that the thiosulphate* does not *interfere with the therapeutic action of* "914" in this respect.

I am, Sir, yours faithfully,
L. W. HARRISON.

Eccleston-square, S.W., May 23rd, 1925.

"ORIENTAL SORE IN A NEW CENTRE IN PALESTINE."

To the Editor of THE LANCET.

SIR,—The annotation in THE LANCET of May 16th (pp. 1010–1011) on this subject recalls to my mind many war memories, and also a possible explanation.

Artuf is a small village, inhabited mainly by Bulgarian Jews, situated at the entrance to one of the strategic passes to Jerusalem, where the Philistine plain abuts on the Judean hills. Before the war the old Turkish narrow-gauge Jerusalem-Jaffa Railway ran through the village. When we captured Southern Palestine in the winter of 1917 the broad-gauge railway from Egypt was pushed up rapidly until it reached Artuf in the spring of 1918. Owing to engineering difficulties, however, the old Turkish line had still to be used from Artuf to Jerusalem for some months before the broad gauge could be pushed on to the Holy City. During this period, therefore, Artuf suddenly blossomed forth from an obscure village into an important entrepôt, for all stores, ammunition, and supplies for Jerusalem and the 20th Corps, amounting to 600–1000 tons per diem, had to be manhandled from the broad to the narrow gauge at this point. Naturally, this necessitated a large supply of Egyptian Labour Corps and Camel Transport Corps labour, and the men of these corps had to be provided with camps in and around the village. In addition, sick and wounded coming down from Jerusalem, mainly from the Jordan valley, had to be accommodated there until we could send a broad-gauge hospital train to evacuate them; and so a British casualty clearing station and an Egyptian detention hospital were stationed during this period at Artuf. Through these hospitals passed British and Egyptian sick and wounded from the Jordan valley, refugees from Amman and Es Salt across the Jordan, and Turkish prisoners of war.

A few cases of oriental sore are known to have been thus evacuated. Now, cutaneous leishmaniasis occurs endemically in Egypt, and considering the thousands of E.L.C. who mixed freely with the natives, and the presence of known cases in the hospitals, it would seem not unlikely that it was at this time (1918) the village became infected. A few months later the broad gauge was pushed on to Jerusalem, the hospitals and camps vanished, and Artuf once again became a mere wayside village; but probably in the interval the damage had been done. No one paid any attention to these people at that time. There was no resident doctor. The incubation period of oriental sore is sometimes as long as 15 months. The disease is not a dangerous one. It has a tendency to spontaneous cure, and it is quite likely that the condition has been overlooked until recently. That, I believe, is the real story of the outbreak.

I am, Sir, yours faithfully,

J. Johnston Abraham,
Formerly A.D.M.S. Lines of Communication,
Egyptian Expeditionary Force.

Harley-street, W., May 25th, 1925.

ULTRA-VIOLET LIGHT TREATMENT.

To the Editor of The Lancet.

Sir,—Our knowledge of ultra-violet light therapy is rapidly improving and accumulating, considerably aided by such helpful communications as those of Dr. J. H. Sequeira and Dr. W. J. O'Donovan, and Dr. Howard Humphris, in your issue of May 2nd. I should like to emphasise certain aspects of this and other electrical treatments that impress me with their growing importance.

The first is the urgent need for organised research into the physical, physiological, and clinical effects of treatment by electricity. It is true that research work is already in hand on the effects of radium, X rays, and ultra-violet light, but I know of no team of workers in this country (including physicists and clinicians) whose reference is on the wider basis of electrical treatment as a whole. The recent striking advances in electro-physics have so stirred the imagination that many practitioners are now prepared to discuss the relative values of wave-lengths of 2000 and 3000 Angström units! This is symptomatic of a hunger for definite physical information, and it is the duty of the medical profession to see that this is provided without delay in as simple and accurate a form as possible. Already in America organised teams of clinicians and electro-physicists are at work.

The second conclusion that I have reached arises from the fact that I have obtained more rapid and impressive results from ultra-violet treatment during the last 18 months or two years than previously; and that owing to the recent dull and wet summers and winters we are suffering from a kind of famine of ultra-violet light. This is borne out by comparing the reactions of patients from London, the country, or abroad, and particularly striking is this difference in old people, just as if their storage capacity of sunlight were small and easily depleted or made up. If this conclusion is correct the need for increased efforts on behalf of smoke abatement becomes greater with each disappointing summer.

The third aspect to which I wish to draw attention is the great value of combining ultra-violet light with other forms of electrical treatment. Dr. Murray Levick has already described the favourable results he obtains in cases of poliomyelitis by using red rays and ultra-violet rays simultaneously. In such cases I have found that a combination of diathermy and ultra-violet treatment enhances the benefits derived from the diathermy current alone, great as these sometimes are.

Burns give surprisingly favourable results, particularly if the ultra-violet light falls on the burnt area and the surrounding skin, the former having a film of liquid paraffin over it. Paraffin, being fluorescent to ultra-violet waves, is therefore converting them to other wave-lengths, and an interpretation of fluorescence of this kind has recently been given by Prof. S. Russ and Dr. Peacock. Growth of the epithelium is more rapid, elastic, and healthy than by any other method I have seen, and dressings can be carried out with little or no pain. In fractures, especially where there is any reason to suspect delay in union, a combination of ultra-violet baths with the use of the direct current has invariably proved effective, since this method was instituted, two years ago. In cases of complete failure to unite, I have seen success achieved by this combination after many other attempts had failed.

Finally in cases of broncho-pneumonia and pneumonia the effect of combining diathermy and ultra-violet light is striking. I can confirm the American experience, and patients, both old and young, ask for their "hot pads" again and again. The effects observed are chiefly diminished restlessness and anxiety, a fall in the rate of respiration with greatly increased amplitude. A series of cases is now being collected which it is hoped will be ready for publication shortly. Combined research work would readily establish whether such apparently beneficial results were a matter of chance or genuine response to suitable electrical currents; and, if the latter, would undoubtedly indicate lines for technical physical improvement in apparatus.

I am, Sir, yours faithfully,

Portland-place, W., May 20th, 1925. C. B. Heald.

CLEAN MILK IN HOSPITALS.

To the Editor of The Lancet.

Sir,—In a letter just received from Dr. G. V. T. McMichael, medical officer of health for Paisley, I am informed that, following on a recent decision of the town council, only certified milk is now supplied to all the patients in the three municipal hospitals in Paisley—the fever hospital, the tuberculosis hospital, and the maternity and child welfare hospital. So far as I am aware, Paisley has therefore the distinction of taking the lead in establishing a much-needed reform. Reference may also appropriately be made to the model dairy established by Sir Robert Philip some years ago for the supply of clean milk to the tuberculosis hospital as part of the general Edinburgh scheme for combating the disease, to the individual pioneer work (in Scotland of Dr. E. P. Calder, of Stow, as a producer of clean milk on a commercial scale, and to the recent action of the County Council of East Lothian in securing clean milk for their sanatoriums.

For many years past a considerable amount of valuable work has been done on the subject of milk, notably at the National Research Institute for Dairying, under the direction of Dr. Stenhouse Williams, which has, however, largely remained outside the field of interest of the medical profession as a whole. It would appear that the time is now ripe for medical practitioners to interest themselves in this subject in a more intensive way than has so far prevailed. It is probably no exaggeration to say that, viewed from the necessary broad standpoint, there is no more pressing or vitally important question at the present time than the adequate provision throughout the country of a clean milk-supply.—I am, Sir, yours faithfully,

Chalmers Watson, M.D.

Edinburgh, May 20th, 1925.

POST-GRADUATE TEACHING IN MIDWIFERY.

To the Editor of THE LANCET.

SIR,—With reference to Dr. Margaret Balfour's letter on this subject in THE LANCET of last week, I should like to inform you that arrangements have now been made to provide practical post-graduate experience in midwifery at the Mothers' Hospital, Lower Clapton-road, E. The cost for a fortnight's course, including board and lodging, is 10 guineas, and includes delivery of normal cases, attendance at all operative work, at ante-natal clinics, and at the rounds of the visiting staff in the wards. Special courses of operative midwifery and lectures will be arranged as desired at an extra fee. By the wish of the authorities of the hospital the course is confined to women post-graduates.

I am, Sir, yours faithfully,
FLORENCE E. BARRETT.
Devonshire-place, W., May 25th, 1925.

THE ALLEVIATION OF CHRONIC PROGRESSIVE DEAFNESS.

To the Editor of THE LANCET.

SIR,—Mr. Cathcart's article on the alleviation of chronic progressive deafness and persistent tinnitus by means of the Zund-Burguet method in your issue of May 9th is of great interest in so far as it applies to a class of disability usually considered to be incapable of amelioration.

Two points in the article call for comment. Mr. Cathcart states: "Of the total number of cases, 68 per cent. have definitely improved after treatment. These comprise 81 per cent. of the cases of nerve deafness, 87 per cent. of the cases of chronic otitis media, and 55 per cent. of the cases of otosclerosis." By *otosclerosis* I presume Mr. Cathcart means chronic catarrh of the middle ear. These results are so contrary to experience as to suggest a possibility of error. As a rule, when nerve deafness is diagnosed but little hope is entertained of any probability of amelioration. One would be interested to know if Mr. Cathcart has any probable explanation of the unusually favourable results obtained by this method.

The second point calling for comment is the statement that the improvement obtained after a full course of 30 sittings is only maintained for a period of from six to nine months. Such a prospect, if placed before these patients, is likely to be discouraging, and it would be interesting to know if after a second course of treatment there is any prospect of greater permanence of the benefit obtained.

I am, Sir, yours faithfully,
Highgate, N., May 18th, 1925. J. LAWSON DICK.

THE PROBLEM OF TUBERCULOUS MILK.

To the Editor of THE LANCET.

SIR,—The special article in your last issue by Dr. W. G. Savage on the Milk-supply and its Improvement has placed before our profession the facts of tuberculisation as they are, but I fear that Dr. Savage does not realise the position we as farmers and feeders are up against. No amount of supervision will prevent milk from being contaminated with the tubercle bacillus. It is not a question of supervision, but a question of education. Milk which has been contaminated with the tubercle bacillus is without any doubt injurious to human beings, and should not be allowed. It is indeed pathetic in these days of modern civilisation and scientific research that we should allow our population to be infected with bovine tuberculosis and, on the other hand, spend thousands of pounds in curing this infection. Preventive medicine has made enormous advancements, but yet the question of tuberculous infection from milk apparently has not been tracked.

When speaking at the Royal Society of Medicine a few months ago I stated that I could convert a tuberculous herd into a non-tuberculous herd, not by segregation, and certainly not by hygienic methods, but by proper methods of feeding. There is no one who knows the value of milk better than I do for feeding purposes, and I cannot find any food which is equal to milk for this purpose. Yet, on the other hand, I fail when I lecture on these points, as does Dr. Savage. The first half of my lecture is chiefly given up to the advantages of milk as a food and then I have to confess that one runs a great risk in feeding milk which has not been sterilised, knowing that sterilised milk has not the value for feeding purposes that natural milk has. The table summarised by Sir Henry Gauvain is sufficient evidence of the dangers of using milk unsterilised.

What, then, is the position of doctors to-day? We cannot conscientiously advise milk to be taken as provided by the cow unless it be from a certified herd in which every cow has passed the tuberculin test, but we all know that reactors occur, even in the best kept herds, and that one cow in a herd may infect the whole milk produced by that herd, and under modern methods of feeding and modern methods of milking I cannot see anything for it but that instead of having 10 per cent. to 50 per cent. of all cows in this country reacting to the tuberculin test, within a few years we shall have the percentage greatly increased. Those of us who are carrying out vitamin experiments are convinced that if you deplete a cow of the vitamin-A factor, by constantly milking her to the enormous extent that we do nowadays, that cow's resistance to tuberculosis is immediately lowered, with the result that infection is almost certain. Further, just think of the poor calf to-day—it is generally reared on artificial foods, chiefly linseed oil, which food is deficient in vitamin A, and we are only blowing on the wind as medical men.

It is far better for us to prevent the cow becoming infected than to deal with her products when it has become infected, and as the result of my experiments in animal nutrition, I am convinced that if you drain an animal of its vitamin content, by milking or suckling, you must replace that vitamin content by addition to its food, and if this were done tuberculosis amongst cows can be radically dealt with.

I am, Sir, yours faithfully,
M. J. ROWLANDS.
Southwood Farm, Westerham Hill, Kent,
May 25th, 1925.

BAKER'S ITCH AND WORKMEN'S COMPENSATION.

To the Editor of THE LANCET.

SIR,—Your legal correspondent in his note last week on this subject (p. 1049) refers to Dr. Prosser White's remarks at the Royal Society of Medicine, and quotes him as stating that "baker's eczema is unknown in France, and that American statistics point to a similar immunity being enjoyed by workers in the United States." Will you allow me to point out that this immunity can only be attributable to the fact that in these two countries the use of so-called "improvers" in the milling of flour is illegal, and that there should be no difficulty in tracing this complaint to the use of such preparations in this country? One of the commonest is potassium persulphate, which decomposes on the addition of water with liberation of oxygen and formation of potassium acid sulphate, the reaction being expressed as follows:—

$$2\,K_2S_2O_8 + 2\,H_2O = 4\,KHSO_4 + O_2.$$

I have been assured by various competent authorities that before the introduction of these "improvers" baker's itch was unknown in this country.

I am, Sir, yours faithfully,
J. T. AINSLIE WALKER, F.I.C., F.C.S.
Ludgate Hill, London, E.C., May 22nd, 1925.

Medical News.

Society of Apothecaries of London.—At examinations held recently the following candidates passed in the subjects indicated:—

Surgery.—F. T. Birkinshaw, Univ. Coll.; M. R. Burke and T. G. L. Davies, St. George's; N. H. Ibrahim, Durham; C. S. Netscher, St. Mary's; and R. J. Rutherford, Durham.

Medicine.—S. J. Alexander, Sydney; M. R. Burke, St. George's; J. H. Clapp, London; J. Herbert, Guy's; P. H. Knowles, Bristol; O. W. Percival, Sydney; W. Irving Pierce, Boston, U.S.A.; J. Maingard, Guy's; R. J. Rutherford, Durham; B. Temple-Raston, St. Mary's; I. Waynik, Charing Cross; and M. E. G. Wilkinson, Bristol.

Forensic Medicine.—S. J. Alexander, Sydney; F. T. Birkinshaw, Univ. Coll.; J. H. Clapp, London; D. T. Jenkins, Edinburgh; I. H. Mackay, Sydney and Univ. Coll.; J. Maingard, Guy's; C. J. Rozario, St. Thomas's; J. Shutt, London; and B. Temple-Raston, St. Mary's.

Midwifery.—S. J. Alexander, Sydney; F. T. Birkinshaw, Univ. Coll.; A. F. Brighmen and D. T. Jenkins, Edinburgh; E. W. D. Long, London; and M. E. G. Wilkinson, Bristol.

The Diploma of the Society was granted to the following candidates entitling them to practise medicine, surgery, and midwifery: M. R. Burke, T. G. L. Davies, D. T. Jenkins, J. Maingard, O. W. Percival, R. J. Rutherford, and B. Temple-Raston.

Royal College of Surgeons of Edinburgh.—At a meeting of the College held on May 20th, Sir Harold J. Stiles, President, in the chair, the 24 successful candidates out of 55 entered, who passed the requisite examinations between Jan. 12th and 19th, were admitted Fellows:—

Robert F. Allan, Bijitendra Basu, Edward J. Bilcliffe, Innes W. Brebner, Russell E. Butchart, Edwin Clark, Harold K. Corkill, Daniel de Bruyn, John A. Doctor, Francis H. Edwards, Frank Ll. Gill, Alan B. Jones, Gilbert E. José, Roshan L. Khera, Richard McAllister, Joseph A. MacFarlane, Colin C. Maclaurin, William J. Payne, Clive J. H. Sharp, Sydney S. Sumner, Cecil H. Terry, Geoffrey W. Theobald, John M. Watters, and John E. Wright.

The following candidates, having passed the requisite examinations, received the Higher Dental Diploma:—

George A. Edwards, William H. Lumb, and John K. Steel.

University of Manchester.—At the June meeting of the University Court it was announced that a new development in connexion with the medical school had been made possible by the coöperation of the Royal Infirmary and the University in the appointment of a director of clinical research with a laboratory at the infirmary, and who would be appointed on the recommendation of a joint committee. On the recommendation of the senate and council, the Court agreed that Prof. Archibald Donald and Prof. George Redmayne Murray be made *Professores Emeriti.*

Belgrave Hospital, London.—An anonymous offer of £10,000 has been made to the Belgrave Hospital for Children towards the cost of building a new wing, on condition that a similar sum is raised. The wing will cost £27,000.

Fellowship of Medicine and Post-Graduate Medical Association.—The first of the new series of Fellowship lectures will be given at 5.30 P.M. on June 9th at 1, Wimpole-street, when Sir Thomas Horder will speak on Some Cases of Fever without Physical Signs.—A four weeks' course in the study of venereal diseases will be held at the London Lock Hospital (Dean-street) from June 2nd to 27th. Members of the staff will teach in the out-patients' department and will lecture on diagnosis and methods employed for combating these diseases. Early application should be made for this course, as it is only held if a sufficient number of entries are received.—There will be a course in dermatology at St. John's Hospital for Diseases of the Skin from June 2nd to 27th, consisting of instruction in the out-patient department and bi-weekly lectures dealing with various skin diseases.—From June 3rd to 25th eight clinical demonstrations on the more important diseases of tropical countries will be given at the London School of Hygiene and Tropical Medicine by Dr. G. C. Low and Dr. P. Manson-Bahr.—The Chelsea Hospital for Women will hold a course from June 8th to 27th, consisting of operations, demonstrations in the wards and out-patient department.—The Victoria Park Hospital has arranged a two weeks' course from June 8th to 20th, when the various diseases of the heart and lungs will be dealt with, either by demonstration or by lecture.—A special course in Urology will be held at St. Peter's Hospital from June 15th to July 11th.

An intensive course in Medicine, Surgery, and the Special Departments has been arranged by the London Temperance Hospital from June 22nd to July 4th.—Copies of the syllabus for the above courses may be obtained from the Secretary to the Fellowship of Medicine, 1, Wimpole-street, London, W. 1.

Orthopædics in Wales.—The sum of £50,000 has been anonymously placed at the disposal of trustees for the medical treatment of cripples in Wales.—The Committee of the Royal National Orthopædic Hospital has prepared plans for providing an additional 200 beds at the country branch at a cost of not less than £50,000. The present out-patient department is now "hopelessly inadequate," the total attendances last year having greatly exceeded 71,000, and plans have been laid for the extension of this department, the nurses' home, resident medical officers' quarters, and workshops at the cost of another £50,000.

Leicester Private Hospital.—As we announced in our issue last week (p. 1093) a private hospital, the gift of Mr. T. Fielding Johnson, was opened in Regent's-road, Leicester, on May 20th. The opening ceremony was performed by Mrs. Fielding Johnson, and the guests, among whom were many prominent local people and representatives of public bodies, were received at the Museum by the President of the Leicester Medical Society, Dr. T. V. Crosby, and organisations in the city and county. The medical guests included Sir George Newman (Ministry of Health), Dr. R. A. Bolam, Mr. J. Basil Hall, Mr. N. Bishop Harman, Mr. H. S. Souttar (chairman of Council, president, treasurer, and chairman of Hospital Committee of the British Medical Association respectively), Sir H. D. Rolleston (President of the Royal College of Physicians of London), Sir J. Bland-Sutton (President of the Royal College of Surgeons of England), Sir W. A. Lane (President of the Fellowship of Medicine), Sir A. E. Garrod (Regius Professor of Medicine, Oxford), Dr. and Mrs. C. J. Bond, Dr. W. I. Cumberlidge, Councillor Dr. and Mrs. G. Brittan Gill, Dr. and Mrs. R. Wallace Henry, Dr. and Mrs. E. Lewis Lilley, Dr. and Mrs. W. W. Mackarell, Dr. and Mrs. N. I. Spriggs, Dr. and Mrs. Killick Millard, Dr. and Mrs. T. Robinson, Councillor Dr. and Mrs. A. T. Coleman, and Colonel Collis. Other medical men included were from Nottingham, Derby, Northampton, Kettering, Desborough, Rothwell, Spalding, Stamford, Grantham, and Peterborough. For two or three days before the ceremony the hospital had been open for public inspection, and was visited by large numbers of people.

Royal Northern Hospital.—On May 25th 14 of the beds closed in 1923 owing to lack of funds were reopened as a maternity department, this having been made possible by the generosity of the Women's United Services League, the Maternity Nursing Association, and the Ladies' League of the hospital. Sir Philip Sassoon spoke of the enormous development of North London during the last 50 years, and of the need in that district for a maternity service. This aspect was further emphasised by the Bishop of Willesden, who said that the Royal Northern, which was the sixth largest hospital in London, served an area of some 70 square miles and a population of about a million. Mr. Malcolm Donaldson, F.R.C.S., said that the three fundamental necessities for combating maternal mortality were the provision of antenatal care, hospitals where any abnormality could be recognised and treated at an early stage, and an efficient nursing service. The new maternity department was to be used as a training centre for midwives, and it was hoped to accommodate about 250 patients—mostly complicated cases—in a year. The Viscountess Jellicoe then declared the maternity department open. She had recently spent five years in New Zealand, where nearly every small town had its own maternity home, a matter in which England, she said, might take a lesson from the Dominion. After the ceremony the maternity department and other parts of the hospital were open to visitors. The Ladies' League maternity ward is the largest, containing five beds; the Lady Jellicoe and the Lady French wards each have two, and there are several single-bed wards. Two of these are for patients able to pay private ward fees, while in the others prices will be accommodated to the patient's income. The light department, housed in an old army hut, has recently been completed. The hut has been divided into cubicles, which serve as treatment rooms for male and female patients, dressing- and waiting-rooms, a surgery and a room for a shower bath, though this has not yet been installed. An arrangement has been made by which children operated on for tonsils and adenoids can be kept in the hospital for 24 or 48 hours.

Glasgow Post-Graduate Medical Association.—The following arrangements have been made for post-graduate teaching in Glasgow from June till October. The teaching facilities are in three forms: (*a*) General Medical and Surgical Course: During the last two weeks of August and the first two weeks of September a whole-time course, for which an inclusive fee will be charged, will be conducted in a number of the general and special hospitals. The course is arranged to include most of the subjects of interest to the general practitioner. On the four Saturday forenoons tuberculosis and infectious fevers will be demonstrated at Ruchill Fever Hospital. (*b*) Special Clinical Courses: Certain special classes have been arranged in several of the hospitals to suit the requirements of general practitioners, who have not very much time to devote to hospital work. (*c*) Clinical Assistantships: In a number of the institutions clinical assistantships are available during the summer months as well as at other times of the year. These clinical assistantships are limited in number, and have been designed to make provision for graduates who desire opportunities for the detailed study of one or other of the "specialties." Graduates may thus become attached to wards or out-patient departments, nominally as clinical assistants. As such they will work under the direct supervision of the physician or surgeon in charge, taking advantage of the facilities for intimate study of the cases, and carrying out such detailed investigations as may be directed. They will not be permitted to interfere, however, with the treatment of any patient. Any further information and a full syllabus of the courses will be supplied on application to the Secretary, Glasgow Post-Graduate Medical Association, the University, Glasgow.

HOME FOR RECOVERY AT LIVERPOOL.—Lord Derby on May 19th opened the Clifford Temple Home of Recovery, Aigburth, an adjunct of the David Lewis Northern Hospital, Liverpool. It consists of a mansion, for many years the residence of the Temple family, and is situated in ideal surroundings of six and a half acres of well-wooded grounds. It was bought and presented to the hospital by Mr. Clifford Temple, who accompanied the gift with a donation of 1000 guineas. The intention is to transfer patients from the Northern Hospital when they have passed the acute stage of their illness, thus liberating beds for new cases. There is accommodation for 25 adult male patients. The home is the first of its kind in Liverpool and it will cost £2000 a year to maintain it. Lord Derby expressed himself as strongly in favour of keeping our hospitals as long as we can from any Government or municipal control. Mr. K. W. Monsarrat, senior honorary surgeon, said the time had passed for building new hospitals in the city or to add to the number of their city hospital beds. The proper thing to do was to use the city hospital for emergency purposes, and when the stages of acute treatment are over, to send the patients to homes on the outskirts for recovery.

BRITISH ASSOCIATION MEETING AT SOUTHAMPTON.—The annual meeting of the Association will be held at Southampton, where the Association previously met in 1846 and 1882, the session lasting from Wednesday, August 26th, to Wednesday, Sept. 2nd inclusive. The inaugural general meeting will take place in the Central Hall at 8.30 P.M. on the opening day, when Prof. Horace Lamb, F.R.S., will assume the presidency in succession to Sir David Bruce, F.R.S., and will deliver an address. Addresses by Sectional Presidents will be given during the following days as follows:—Psychology: Prof. C. Spearman, F.R.S., on Mental Law of Diminishing Returns. Zoology: C. Tate Regan, F.R.S., on Organic Evolution, Facts and Theories. Chemistry: Prof. C. H. Desch, F.R.S., on the Chemistry of Solids. Physiology: Prof. A. V. Hill, F.R.S., on the Physiological Basis of Athletic Records. Agriculture: Dr. J. B. Orr, on the Inorganic Elements in Animal Nutrition. Discussions will be held in the Section of Educational Science, on Health in Schools, Epidemics and Dietary; in the combined Sections of Psychology and Educational Science on Recent Investigations upon Vocational Guidance; and in the combined Sections of Physiology and Psychology, on the Acquisition of Muscular Skill. Arrangements have been made with the railway companies for the issue of return tickets to Southampton at a single fare and a third. The secretary of the Association is Mr. O. J. R. Howarth, O.B.E., M.A., Burlington House, London, W. 1.

ROYAL SANITARY INSTITUTE.—The thirty-sixth congress of the Institute will be held at Edinburgh from July 20th to 25th. The Duke of York is Honorary President of the congress, and Sir John Gilmour, Bart., M.P., Secretary for Scotland, as President, will deliver his inaugural address to the congress on July 20th. Already 675 delegates have been appointed from nearly 400 sanitary authorities from all parts of the United Kingdom. Delegates will also attend from Australia, India, South Africa, China, Egypt, France, Japan, U.S.A., New Zealand, Canada, Poland, and British West Indies. The meetings will be held in the University. The congress is divided into (*a*) sections: Sanitary science, engineering and architecture, maternity and child welfare, personal and domestic hygiene, industrial hygiene; and (*b*) conferences of various health authorities. The names of those who will preside over these meetings include Captain W. E. Elliot, M.P., Lieut.-Colonel Gerald Leighton, Sir George Newman, Prof. T. Hudson Beare, and Mr. A. Horsburgh Campbell. Over the meetings, more particularly of interest to the lady members, Lady Aberdeen, Lady Minto, Lady Mar and Kellie, and Lady Leslie Mackenzie will preside. Among the subjects of public health interest to be discussed may be mentioned the Government health policy, disease prevention, Schick test and diphtheria, occupation and the tuberculous, rheumatic heart disease, small-pox, cancer, plague, leprosy, diseases of children, open-air schools, midwifery, maternity hospitals, child welfare, homes for children, child gardens, toddlers' play-rooms, day nurseries, house management, plumbers' work, reinforced concrete, sewerage of towns on tidal waters, river pollution, slum areas, water-supply, air pollution, milk and meat inspection, health visitor in India, work of a county health visitor, inspection of midwives. The lecture to the congress will be delivered by Sir Leslie Mackenzie, and the popular lecture by Dr. Charles Porter. The health exhibition, which is an important part of the congress, will include appliances for housing and general sanitation, and matters relating to health and physical welfare and domestic comfort, will be held in the Waverley Market. Full particulars of the congress may be obtained from the Secretary at the Royal Sanitary Institute, 90, Buckingham Palace-road, London, S.W. 1.

ROYAL MEDICAL BENEVOLENT FUND GUILD.—A produce market and fête will be held in aid of the Guild on June 24th in the Royal Botanic Gardens, Regent's Park, London, N.W.

ROYAL MEDICAL BENEVOLENT FUND.—At the last meeting of the committee 31 cases were considered and £547 voted to 28 applicants. The following is a summary of the new cases relieved:—

M.R.C.S. Eng., 1894, aged 55, unmarried, was a major in the R.A.M.C. A mental breakdown has rendered him unfit for any further work. A brother and four sisters contribute £130 towards his support, but one contribution of £36 per annum has ceased owing to the contributor's ill-health. The Fund was asked to make a grant to cover this amount and £30 was voted in 12 monthly instalments.

Widow, aged 57, of M.R.C.S. Eng. who practised in Monmouthshire and died in 1922. Applicant has tried to support herself by taking boarders, but owing to ill-health and lack of boarders has got into debt. She has had to sell her trinkets and late husband's books to help to pay her way. Total debts amount to £23. Income from boarders £117. Voted £18 in 12 monthly instalments.

Widow, aged 31, of M.B. Aberd. who practised in London and died from tuberculosis in August of last year. Applicant and daughter, aged 6, are left with £3 a week, which will last for another 18 months. She pays her parents £2 10*s*. a week for herself and child for board and lodging. Applicant is training as a lady hairdresser and the Scottish Corporation found the sum of £30 for the course and asked the Fund to help towards this amount. The Fund voted £15.

M.R.C.S. Eng., aged 68, who practised in Lancashire until ill-health compelled him to give up. Applicant's daughter has tried to support herself and her father, but is now trying to get him in a home as he requires constant attention. The boarding house which the daughter has had is a failure and she now wants to get a post so as to be self-supporting. She asks for a grant as the applicant has no income. Voted £10 in 12 instalments.

Subscriptions may be sent to the Hon. Treasurer, Sir Charters Symonds, at 11, Chandos-street, Cavendish-square, London, W. 1.

DONATIONS AND BEQUESTS.—Mr. Edwin Sutton, of Higher Broughton, Manchester, left, on his wife's death, £1000 to endow an E. and B. Sutton bed in Salford Royal Hospital requesting that as far as possible this should be used preferably for the Sons of Temperance, Salford Grand Division.—Mr. Alfred Hassall Straker, of Oakham, Rutland, and Newcastle-upon-Tyne, left £12,000 to charities, including £5000 to Dr. Barnardo's Homes.—Sir George Wheaton Fox, sugar merchant, of Liverpool, by his will provided £17,000 for charities, as well as gifts to employees. He left £2000 each to the Royal Infirmary and the Blue Coat School, Liverpool; £1000 each to the Royal Southern Hospital, the David Lewis Northern Hospital, the Stanley Hospital, the Liverpool Seamen's Orphanage; and £500 to the Birkenhead Borough Hospital; also a personal bequest of £1000 to Dr. Richard Thacker King, of West Kirby.—Sir William Cresswell Gray, of Bedale, Yorks, shipbuilder, West Hartlepool, left £5000 to the Hospitals Trusts of the Hartlepools; £3000 for a Gray Convalescent Home for his employees, and £250 per annum towards upkeep; and £2000 to the Victoria Homes, West Hartlepool.—Miss Mary Russell, of Cheetham Hill, Manchester, who left estate of the value of £60,525, after fulfilment of a number of personal legacies, left the residue of her property, computed to be about £50,000, to be divided equally between the Christie Hospital Cancer Pavilion and Home, Manchester, St. Mary's Hospitals, Manchester, the Manchester Royal Infirmary, the Manchester Eye Hospital, the Salford Royal Hospital, and the Royal National Lifeboat Institution.—Mr. John William Richardson, of Walmer, Kent, who left property of the value of £11,877, gave, subject to certain legacies and life interests, the ultimate remainder of his property to the Miller Hospital for South-F [illegible] London, Seamen's Hospital, Dreadnought, and the [illegible]

Victoria Hospital.—The late Sir George A. Critchett, surgeon oculist to the King, left by will £100 to Epsom College and £100 to the Royal Medical Benevolent Society. —An anonymous donor has made offer of £10,000 for an extension scheme of Hull Victoria Children's Hospital, conditional on another £10,000 being raised. Immediate offers of £500 each were made by Mr. G. J. Bentham and Messrs. Reckitt and Sons.—At the spring meeting of the governors of the University College of Wales at Barmouth, it was announced that the Misses Davies, of Llandinam, who had already subscribed very generously towards the College, had sent a gift of £2500 to clear the bank overdraft on the Edward Davies Chemical Laboratories, Aberystwyth. —Mr. W. Henry Hutchinson left £100 to the Leicester Royal Infirmary.—Mr. David Isaacs, Cape Town, South Africa, left £100 each to the London Hospital, the Jews Hospital and Orphan Asylum, the Jewish Deaf and Dumb Home, the Jewish Institution for Indigent Blind, the Hospital for Consumption and Diseases of the Chest, London, S.W., the Metropolitan Hospital, London, and the Middlesex Hospital. Also £100 each to ten institutions in Cape Town.—Dr. Max Thorne, one of the governors of the Royal Free Hospital, during a sojourn in the United States, collected £1500 for the endowment of beds in the George Washington Ward of the hospital—the only ward of its name in the world. Hopes are entertained of receiving shortly a further £3500, also from America.—Mr. Thomas McLaren Davidson, Dundee, on the death of a legatee, *left £1050 to Dundee Royal Infirmary, to endow a cot* in the children's ward to be known as the "Thomas McLaren Davidson and Margaret Davidson Cot."—Mr. Arthur Turner, Southam, Warwickshire, who left estate of the gross value of £31,971, failing issue to his daughter, gave the ultimate residue of his estate, as to five-twelfths to the Warneford Hospital, Leamington, one-twelfth each to the Midland Counties Home and Hospital for Incurables, and the Royal Devonshire Hospital, Buxton.

MEDICAL WOMEN'S FEDERATION.—The annual meeting was held in the rooms of the Medical Society of London on May 7th. The annual report showed that during the year the membership of the Federation largely increased, the total membership on Dec. 31st, 1924, being 900. Reports from the various committees of the Federation were received and discussed by the council at a meeting held on May 8th and 9th, under the presidency of Miss Frances Ivens. The report of the Standing Committee for the Defence of Married Medical Women dealt with the action taken in connexion with the resolution of the London County Council, passed 1st October, making married medical women ineligible for posts on the Council staff. The objects aimed at were the rescinding of the standing order against the employment of married women workers in general, and the establishment of the principles of free choice of candidates and the consideration of cases on their own merits. In connexion with the report of the subcommittee appointed to consider the Nursing Homes (Registration) Bill, motions were passed—

(1) That in the case of the house of a doctor taking in patients, the inspection should be carried out by a medical practitioner, and not by a nurse; and (2) no doctor who has a professional plate already fixed to the exterior of the house shall be compelled to display in addition the fact that the house is used for resident patients—this should not exempt the doctor from the duty of registration under the Act, nor from inspection which in the case of a doctor should be carried out by a medical officer.

It was recommended that the house of a medical practitioner taking in not more than one patient for treatment or supervision should be exempted from inspection. Reports were also received from representatives of the Federation on Committees of the British Medical Association. Some discussion arose on the report of the representative on the B.M.A. Insurance Acts Committee, and the following resolution was passed:—

That in the event of the extension of the National Health Insurance medical benefits to wives and adult dependants of insured persons, the general principle of the free choice of a doctor should be jealously guarded.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

Bills Advanced.

ON Thursday, May 21st, the Poor-law (Emergency Provisions Continuance Scotland) Bill was considered on report and read a third time. The Pensions Bill was considered on report and agreed to.

HOUSE OF COMMONS.

WEDNESDAY, MAY 20TH.

Maternity and Child Welfare Centres.

MR. GROVES asked the Minister of Health the number of child welfare centres in the various localities in actual operation at present.—SIR KINGSLEY WOOD (Parliamentary Secretary to the Ministry of Health) replied: According to the information in the possession of my right hon. friend's department the number of maternity and child welfare centres in England and Wales in operation on May 1st was 2368.

Tuberculosis Statistics.

Lieut.-Colonel HENEAGE asked the Minister of Health if he could give the total number of people in Great Britain suffering from tuberculosis in 1924, and the number of deaths; the total number of children under 14 years suffering from tuberculosis of the glands and bones, and the number of deaths; if he could give the numbers traced to milk infection, and all the above figures for Lincolnshire.—Mr. N. CHAMBERLAIN replied: I regret that information is not available as to the total numbers of persons who were suffering from tuberculosis in 1924. I have, however, recently issued special regulations as the result of which reliable data should be available next year as to the numbers of tuberculous persons whose cases have at any time been notified to medical officers of health and who are still suffering from the disease at the end of 1925. The number of deaths in England and Wales in 1924 from all forms of tuberculosis was 41,103; and in Lincolnshire (including the county boroughs of Lincoln and Grimsby) 636. The number of deaths of persons under 15 years of age from tuberculosis of the glands and bones in England and Wales was 72. Separate figures for Lincolnshire are not at present available. I cannot say in how many of these cases milk infection was traced. Researches made on behalf of the Medical Research Council would, however, indicate that, in a series of cases of bone and joint tuberculosis in children, the infection was found to be of bovine origin in some 20 per cent. of the cases, whilst in cases of gland tuberculosis the percentage was considerably higher.

Vaccination Marks.

MR. WHITELEY asked the Minister of Health whether he was aware that modern methods of vaccination tend to produce faint marks which sometimes disappear; and whether the medical officials of the Ministry based their classifications of small-pox cases in regard to the vaccinal condition on the presence or absence of the vaccination mark.—Mr. N. CHAMBERLAIN replied: I am advised that the marks produced by modern methods of successful primary vaccination seldom disappear. Small-pox cases are classified in the annual reports of the chief medical officer of my department under the following headings: (*a*) Vaccinated as evidenced by presence of one or more vaccination cicatrices; (*b*) stated to have been successfully vaccinated, but no vaccination cicatrix present; (*c*) stated to be unvaccinated (or vaccinated unsuccessfully) and no vaccination cicatrix present; (*d*) previously unvaccinated, but vaccinated during incubation of small-pox; (*e*) stated to have been successfully revaccinated.

Deaths of Women in Childbirth.

welfare authorities the importance both of antenatal supervision and of the provision of specialist advice and treatment for necessitous patients whenever necessary. Under the Midwives Acts the services of a doctor are available in emergencies without cost to the patient if she is unable by reason of poverty to pay the doctor's fee. The circular also urges the provision of maternity beds, and in individual cases local authorities are recommended to make good any deficiencies in this respect which are discovered as the result of inspections by my medical officers. I see no need for any special investigation on this point.

Deaths from Infectious Diseases.

Mr. RHYS DAVIES asked the Minister of Health whether he would give, in tabular form, the number of deaths from influenza, scarlet fever, measles, whooping-cough, chicken-pox, sleepy sickness, and small-pox for each of the last ten years.—Mr. N. CHAMBERLAIN replied: The required figures for England and Wales are as follows:—

Year.	Influenza.	Scarlet fever.	Measles.	Whooping-cough.	Chicken-pox.	Encephalitis lethargica.	Small-pox.
1915 ..	10,484	2,106	16,445	8,143	94	—	13
1916 ..	8,791	1,381	5,413	6,075	65	—	16
1917 ..	7,289	765	10,538	4,509	69	—	3
1918 ..	112,329	1,020	9,787	9,898	54	16	2
1919 ..	44,801	1,221	3,534	2,605	55	294	28
1920 ..	10,665	1,430	7,190	4,401	71	480	30
1921 ..	8,995	1,305	2,241	4,576	57	729	5
1922 ..	21,198	1,382	5,694	6,370	40	339	27
1923 ..	8,461	993	5,316	4,162	52	531	7
1924 ..	18,986	884	4,831	3,983	59	1,407	13

THURSDAY, MAY 21ST.

Revision of Medical Awards.

Captain GEE asked the Minister of Pensions whether awards made by medical boards were subject to revision by officials of his department.—Major TRYON replied: Under the terms of the Royal Warrant pension can only be awarded in accordance with the rate of assessment certified by a medical board, or a medical officer of the Ministry. In point of fact, every award made by my department under the Royal Warrant is in accordance with the assessment given by a medical board which has actually seen and examined the man.

Electrocardiograph for Pensioners.

Captain GEE asked the Minister of Pensions whether his department possessed an electrocardiograph; and, if not, would he consider the advisability of obtaining one in the interests of ex-Service men suffering from cardiac disability.—Major TRYON replied: Arrangements have been in force for some years with local institutions whereby the Ministry obtain electroradiograms in all cases where this is medically considered necessary. The nature of the Ministry's work, whereby medical examination is carried out in the interest of pensioners at a variety of centres throughout the kingdom, has not made it practicable to adopt my hon. friend's suggestion.

Procedure in Coroners' Courts.

Mr. DIXEY asked the Home Secretary whether he had any statement to make as to when he proposed to introduce legislation to regulate or abolish the procedure of double inquiries of magistrates' courts and coroners' courts in murder and manslaughter cases.—Sir W. JOYNSON-HICKS replied: I hope to introduce the Coroners Bill very shortly.

Approved Societies and Hospital Payments.

Mr. GRUNDY asked the Minister of Health how many approved societies and branches have agreed to devote a portion of their surpluses to payments in respect of hospital treatment of their members to the funds of voluntary hospitals; and what was the sum given to voluntary hospitals under agreements with approved societies during the 12 months ending March 31st, 1925.—Mr. N. CHAMBERLAIN replied: The number of societies and branches in England whose existing schemes of additional benefits include payments to hospitals or convalescent homes is 963, with a membership of about 5 million insured persons. The sum spent under this additional benefit during the year ended Dec. 31st, 1924, was about £210,000. It is not possible to state how much of this sum was paid to hospitals, as distinct from convalescent homes, but it is believed that by far the greater part was paid in respect of the treatment of members in hospitals.

Powers of the General Medical Council.

Mr. BASIL PETO asked the Minister of Health whether he would consider the amendment to the Medical Act of 1858 in order to give a right of appeal to medical practitioners struck off the Register by decisions of the General Medical Council holding them guilty of infamous conduct. —Mr. N. CHAMBERLAIN replied: I am not aware that there is any general demand among the medical profession for the amendment of the Medical Acts in the direction suggested by my hon. friend, and in the absence of general agreement I am not prepared to introduce legislation.

Mr. PETO: Does the right hon. gentleman not think that the absolutely autocratic powers over the lives and careers of the whole medical profession which the General Medical Council has under the Act of 1858 require some revision?

Sir H. CRAIK: Is it the experience of the right hon. gentleman's department that the action of the General Medical Council has been highly expedient in the interests of health and the community generally?

Mr. N. CHAMBERLAIN: If there were any general feeling among the medical profession that the powers of the General Medical Council were excessive I do not think I should have any difficulty in ascertaining it. They have not generally been backward in putting forward any grievance.

Instruction in Manipulative Surgery.

Mr. BASIL PETO asked the Minister of Health whether, in the interest of public health, he would consider legislative action to insure that persons qualified to give practical instruction in manipulative surgery should have the opportunity of giving it and also of obtaining degrees in this branch of surgery.—Mr. N. CHAMBERLAIN replied: Under the revised medical curriculum adopted by the General Medical Council in 1922 practical instruction in manipulative surgery can be, and is, given by persons holding registrable medical qualifications. As at present advised I am not prepared to recommend legislation for the purpose of establishing degrees or diplomas for persons who have not satisfied the statutory requirements of the General Medical Council.

Scientific Research.

Mr. HERBERT WILLIAMS asked the Prime Minister whether action, to ensure adequate coördination in respect of the whole of the expenditure exceeding £1,000,000 provided in this year's estimate for scientific research, was being taken by the Lord President of the Council.—Mr. BALDWIN replied: My noble friend, the Lord President of the Council, has no responsibility for ensuring adequate coöperation in respect of the whole of the expenditure for scientific research, which is estimated for 1925-26 to exceed £1,000,000, but the Department of Scientific and Industrial Research and the Medical Research Council, for whose activities the Lord President is responsible, is so far as the first-named department is concerned, provided with machinery for the coördination of the research work of the technical establishments of the fighting services which has a civilian interest and of certain other Government departments. The department has no control over the work of the research establishments maintained by other Government departments, and has no responsibility in connexion with research undertaken purely for defence purposes. Conferences between representatives of the Department of Scientific and Industrial Research, the Medical Research Council, and the Development Commission are held periodically for the consideration of matters of common interest to these departments.

Cost of Tuberculosis Treatment.

Colonel DAY asked the Minister of Health the total amount spent by local authorities on tuberculosis treatment in the years 1923 and 1924 respectively, including capital expenditure.—Mr. N. CHAMBERLAIN replied: The following table shows the gross expenditure, so far as information is at present available, of local authorities in England and Wales on the treatment of tuberculosis, during the financial years ended on March 31st, 1923 and 1924:—

—	Year ended March 31st—	
	1923.	1924.
	£	£
Capital expenditure defrayed out of loans on capital grants ..	348,748	Not yet available.
Other expenditure..	2,749,073	2,766,131

Deaths from Hydrochloric Acid Poisoning.

Colonel DAY asked the Minister of Health the number of deaths caused by persons drinking spirits of salts during the year 1924; whether he was aware that the sale of this dangerous poison was on the increase; and if he would take any action that will make the same less accessible.—Mr. N. CHAMBERLAIN replied: The figures for the year 1924 are not yet available. The number of deaths from hydrochloric acid poisoning in 1923 were: suicides 73 and accidents 7. These figures do not differ appreciably from those of the two previous years, and on the information at present available there does not appear to be any ground for increasing the restrictions on the sale of hydrochloric acid already imposed by Section 5 of the Poisons and Pharmacy Act, 1908.

Deaths from Small-pox.

Mr. BROAD asked the Minister of Health the ages of the 13 persons registered in 1924 as dying from small-pox and the districts in which those deaths were registered; and whether any other disease was mentioned on the death certificate.—Mr. N. CHAMBERLAIN replied: The following table gives the particulars asked for:—

Sex and age.	(*a*) Area in which death occurred. (*b*) Area of residence.	Cause as certified.
M., 10 mths.	(*a*) (*b*) Hucknall.	Sm.-p.; marasmus.
F., 15 „	(*a*) (*b*) Middlesbrough.	Whooping-cough; broncho-pneum.; sm.-p.
F., 9 „		Sm.-p.; convulsions
M., 15 yrs.	(*a*) Plymouth; (*b*) Stockton-on-Tees.	Sm.-p.
M., 2 mths	(*a*) (*b*) Stapleford.	Variola.
M., 24 days	(*a*) (*b*) East Dean and United Parishes.	Sm.-p.
F., 22 mths.		Sm.-p.; measles; convulsions during convales.
F., 14 yrs.	(*a*) (*b*) Chesterfield.	Congen. cretinism; valv. heart dis.; dropsy; sm.-p.
F., 28 days	(*a*) (*b*) Barnsley.	Congen. debility; variola.
F., 36 yrs.	(*a*) Kingsbury; (*b*) Willesden.	H. sm.-p.
M., 7 „		H. sm.-p.; cardiac failure.
F., 39 „		Ditto.
F., 52 „	(*a*) (*b*) Ashington.	Pelvic abscess; sm.-p.

H. sm.-p. = Hæmorrhagic small-pox.

MONDAY, MAY 25TH.

Naval Ratings and Tuberculosis.

Sir BERTRAM FALLE asked the Parliamentary Secretary to the Admiralty what percentage of naval ratings invalided during the year 1924 owing to tuberculosis was attributable to service; and what percentage was considered to be not attributable to service.—Mr. DAVIDSON replied: The percentages are 4 per cent. and 96 per cent. respectively.

TUESDAY, MAY 26TH.

Books on Technical Subjects.

Mr. J. B. COUPER asked the President of the Board of Trade whether he would introduce legislation making compulsory the insertion in every book of the date of compilation or of issue, in view of the mass of technical literature published in recent years and the difficulty in ascertaining readily the most up-to-date publications on various technical subjects.—Sir BURTON CHADWICK (Parliamentary Secretary to the Board of Trade) replied: I cannot hold out any prospect of such legislation.

Scottish Medical Insurance Officers' Reports.

Mr. JOHNSTON asked the Under Secretary to the Scottish Board of Health if he would make available for the inspection of members in the library copies of the reports for the year 1924 of the district medical insurance officers under the Scottish Board of Health for the cities of Edinburgh, Glasgow, Aberdeen, and Dundee.—Captain ELLIOT replied: The reports in question are of a confidential nature, and it would not be in the public interest to publish their contents in full. A summary of salient features with extracts relating to points of special interest will, however, be embodied in the Board's annual report for 1924, which will be made available at the earliest possible date.

Dr. G. P. Buchan has been elected President of the Society of Medical Officers of Health for the session 1925-6.

EXTENSION OF DUNDEE ROYAL INFIRMARY.—Through a gift of £25,000 from Mrs. Marryat, Dundee Royal Infirmary has just been able to open an extension of the Caird Pavilion comprising operation theatres and a medical electrical department.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Wednesday, June 3rd

SURGERY: at 5.30 P.M.

Paper:

Dr. Charles H. Mayo: A Consideration of Gastric and Duodenal Ulcer.

(See below under Saturday, June 6th.)

Thursday, June 4th.

OBSTETRICS AND GYNÆCOLOGY: at 8 P.M.

Annual General Meeting (adjourned from May 7th):

Election of Officers and Council.

Election of Corresponding Member.

To be followed immediately by the Ordinary Meeting.

Specimens:

Mr. A. C. Palmer: Endometrioma of Perineum and Vulva (three cases).

Mr. Aleck Bourne: (1) Chorion-epithelioma; (2) Chronic Metritis as a Cause of Sustained Pyrexia.

Papers:

Dr. Abernethy Willett: Placenta Prævia treated by Traction on the Fore-coming Head.

Mr. D. C. L. Fitzwilliams (introduced by Mr. C. White): Curiosities in Connexion with the Secretion of Milk.

Friday, June 5th.

LARYNGOLOGY: Summer Meeting.

Papers: at 9.30 A.M.:

Dr. Tapia (Madrid): The Big Pharyngostomes as an Accident in Laryngectomy. How they can be avoided and way of closing them.

Followed by Mr. Wilfred Trotter and Mr. Lionel Colledge.

Prof. Burger (Amsterdam): Speech after Laryngectomy (with exhibition of a patient).

Demonstrations:

Mr. Lionel Colledge: McKenty-Western Artificial Larynx (with exhibition of patients).

Mr. R. Graham Brown (Brisbane): An Artificial Larynx.

Papers:

Dr. Charles Mayo: Methods of Caring for Diseases of the Pharynx, Larynx, and Mouth.

Dr. Ritchie Rodger (Hull): Tracheotomy in Tuberculous Laryngitis.

Microscopical and Lantern Demonstration:

Dr. A. Logan Turner and Dr. F. E. Reynolds (Edinburgh): Furuncle of the Nasal Vestibule and Cavernous Sinus Thrombosis; the Pathway of Infection.

Kinematograph Film:

Sir Charles Ballance and Mr. Lionel Colledge: Restoration of Movement in Vocal Cord after Nerve Anastomosis.

Papers:

Dr. J. S. Fraser: Intranasal Dacryocystotomy.

Dr. A. Lowndes Yates: The Sinus Condition in Encephalitis Lethargica.

Cases and Specimens will be shown at 3 P.M. by Mr. Douglas Guthrie, Mr. Harold Kisch, Mr. R. Graham Brown, Dr. Jobson Horne, Sir James Dundas-Grant, Mr. Ridout, Mr. Jefferson Faulder, Mr. Herbert Tilley, and Dr. Dan McKenzie.

Saturday, June 6th.

OTOLOGY: at 10.30 A.M. (Cases at 9.45 A.M.)

General Discussions:

Methods of Drainage of Brain-abscesses.

Artificial Aids to Hearing.

Cases and Specimens will be shown.

SURGERY.

A Dinner will be given by the Section in honour of Dr. Mayo, *on the evening of Saturday, June 6th*, at the Hotel Cecil, at 7.30 P.M. Tickets, exclusive of wine, 15s. each.

All applications for seats must be *accompanied* by cheque for the number of tickets required, and should be sent to the Hon. Secretaries of the Section, at 1, Wimpole-street, W., by Saturday, May 30th.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, June 1st, to SATURDAY, June 6th.—LONDON LOCK HOSPITAL, Dean-street. Comprehensive Course. Daily Instruction in Out-patient Departments and lectures by members of the staff.—LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE, Endsleigh-gardens, N.W. Tuesday and Thursday, 2 P.M., Lecture-demonstrations by Dr. P. Manson-Bahr and Dr. G. C. Low.—ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN, Leicester-square. Daily Demonstrations in the Out-patient Department. Bi-weekly lectures by Dr. Griffith and Dr. Sequeira.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.

TUESDAY, June 2nd.—12 noon, Dr. Burrell: Chest Cases. 2 P.M., Mr. Sinclair: Surgical Out-patients. 3 P.M., Dr. Pritchard: Medical Wards.

WEDNESDAY.—11 A.M., Medical Registrar: Medical Wards. 2 P.M., Dr. Owen: Medical Out-patients. 2.30 P.M., Mr. Donald Armour: Surgical Wards.

THURSDAY.—10 A.M., Dr. Grainger Stewart: Neurological Dept. 11 A.M., Sir Henry Simson: Gynæcological Wards. 2 P.M., Mr. MacDonald: Genito-Urinary Dept.

FRIDAY.—10 A.M., Dr. Dowling: Skin Dept. 12 noon, Surgical Registrar: Surgical Pathology. 2 P.M., Mr. Vlasto: Throat, Nose, and Ear Dept.

SATURDAY.—10 A.M., Dr. Saunders: Medical Diseases of Children. 10 A.M., Mr. Banks-Davis: Operations on Throat, Nose, and Ear.

Daily, 10 A.M. to 6 P.M., Saturdays, 10 A.M. to 1 P.M., In-patients, Out-patients, Operations, Special Departments.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen-square, Bloomsbury, W.C. 1.

POST-GRADUATE COURSE: MAY–JUNE, 1925.

CLINICAL LECTURES AND DEMONSTRATIONS.

TUESDAY, June 2nd.—2 P.M., Out-patient Clinic: Dr. Walshe. 3.30 P.M., Disorders of Gait: Dr. Risien Russell.

THURSDAY, June 4th.—2 P.M., Out-patient Clinic: Dr. Kinnier Wilson. 3.30 P.M., Encephalitis Lethargica and its Sequelæ: Dr. Hinds Howell.

FRIDAY, June 5th.—2 P.M., Out-patient Clinic: Dr. Gordon Holmes. 3.30 P.M., Some Types of Myopathy: Dr. James Collier.

COURSE OF LECTURES AND DEMONSTRATIONS ON THE PATHOLOGY OF THE NERVOUS SYSTEM.

MONDAY, June 8th. 12 noon, The Neuron: Dr. J. G. Greenfield.

COURSE OF LECTURES AND DEMONSTRATIONS ON THE ANATOMY AND PHYSIOLOGY OF THE NERVOUS SYSTEM.

TUESDAY, June 2nd.—12 noon, The Basal Ganglia: Dr. Walshe.

THURSDAY, June 4th.—12 noon, The Forebrain: Dr. Walshe.

Dr. H. J. Macbride will give a COURSE OF EIGHT CLINICAL DEMONSTRATIONS, chiefly on METHODS OF EXAMINATION OF THE NERVOUS SYSTEM, in the Wards at 10 A.M. on Tuesdays and Fridays, if sufficient entries are received. The fee for this Course will be £2 2*s.* (commenced Tuesday, May 19th).

Mr. Armour and Mr. Sargent operate at the Hospital on Tuesday and Friday mornings at 9 A.M., or at such other times as may be announced.

Any part of the Course may be taken separately. Special arrangements will be made for those unable to take the whole Course.

Fees should be paid to the Secretary of the Hospital at the office on entering for the Course.

J. G. GREENFIELD, Dean of Medical School.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

TUESDAY, June 9th.—4.30 P.M., Dr. J. K. C. Laing: Demonstration of Cases of Mental Disease (at the Mental Hospital, New Southgate, N.).

FRIDAY.—4.30 P.M., Mr. A. E. Giles: Treatment by Radiation in Gynæcology.

Daily.—Clinics in General and Special Departments, Demonstrations, Operations, &c.

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, Leicester-square, W.C.

TUESDAY, June 2nd.—5 P.M., Dr. Griffith: The Bullous Eruptions.

THURSDAY.—5 P.M., Dr. Sequeira: Dermatitis Artefacta.

ST. MARY'S HOSPITAL INSTITUTE OF PATHOLOGY.

THURSDAY, June 4th.—5 P.M., Sir Arthur Keith: The Structural and Functional Disorders of the Great Bowel.

UNIVERSITY OF LIVERPOOL POST-GRADUATE LECTURES. (At 3.30 P.M.)

WEDNESDAY, June 3rd.—(At the Northern Hospital.) Dr. H. S. *Pemberton*: The Treatment of Dyspepsia.

THURSDAY.—(At the Stanley Hospital.) Dr. Gullan: Diabetes and its Treatment.

Appointments.

FRAZER, W. M., M.B., Ch.B. Liverp., D.P.H., has been appointed Medical Officer of Health, Dewsbury.

MCFADDEN, GEORGE D. F., M.B., M.Ch., F.R.C.S. Eng., Assistant Surgeon to the Ulster Hospital, Belfast.

MURRAY, GEORGE R., M.D. Camb., F.R.C.P. Lond., Emeritus Professor of Medicine in the Victoria University of Manchester and Consulting Physician to the Manchester Royal Infirmary.

PORTEOUS, A. B., M.D., B.S. Lond., D.P.H., Acting Medical Officer of Health and Administrative Tuberculosis Officer, Paddington.

ROBERTSON, J. K. A., M.D. Edin., to be one of the Medical Referees under the Workmen's Compensation Act for the Greenock District.

King's College Hospital: MITCHELL, A., M.R.C.S., L.R.C.P., STRAUSS, E. B., B.M., B.Ch., POWELL, R. V., M.R.C.S., L.R.C.P., OSBORN, M. M., M.R.C.S., L.R.C.P., FRANKLIN, E. L., M.R.C.S., L.R.C.P., ROBERTSON, N. L. D., M.B., B.S., FISH, W. M., M.R.C.S., L.R.C.P., PENNETT, G. M., M.R.C.S., L.R.C.P., HERBERT, F. K., M.R.C.S., L.R.C.P., MALMBERG, M., M.R.C.S., L.R.C.P., and BUCKLEY, O. B., M.R.C.S., L.R.C.P., additional Clinical Assistants; PERKINS, A. C. T., M.B., B.S., and SIMPSON, A. S., M.R.C.S., L.R.C.P., Casualty Officers; TOWNSEND, H. S., M.R.C.S., L.R.C.P., House Anæsthetist; NEWMAN, C. E., M.B., B.Ch., WOOD, C., M.R.C.S., L.R.C.P., COLLIS, W. R. F., M.R.C.S., L.R.C.P., COVE-SMITH, R., M.R.C.S., L.R.C.P., and READ, T. S., M.R.C.S., L.R.C.P., House Physicians; COOPER, H. A., M.R.C.S., L.R.C.P., DYER, R. H., M.R.C.S., L.R.C.P., DAGGETT, W. I., M.R.C.S., L.R.C.P., AHRENS, B. E., M.R.C.S., L.R.C.P., CORY, J. W. E., M.R.C.S., L.R.C.P., STRANGE, F. O. T., M.R.C.S., L.R.C.P., APPLETON, C. E., M.R.C.S., L.R.C.P., and ADLINGTON, B., M.R.C.S., L.R.C.P., House Surgeons; EDMUNDS, H. C., M.R.C.S., L.R.C.P., Junior House Anæsthetist; WILLS, M. A., M.R.C.S., L.R.C.P., Junior House Surgeon to the Throat Department; SEAH, E. K., M.R.C.S., L.R.C.P., Assistant Casualty Officer; ALLEN, B. L., L.D.S., Second Dental House Surgeon.

Vacancies.

For further information refer to the advertisement columns.

Blackburn County Borough.—Asst. M.O.H. and Asst. Sch. M.O. £600.

Blackburn Union Institution and Infirmary.—Res. Asst. M.O. £200.

Cambridge, Addenbrooke's Hospital.—H.S. Also H.P. Each at rate of £130.

Chelsea Hospital for Women, Arthur-street, S.W.—Sen. and Jun. H.S.'s at rate of £120 and £100 per annum respectively.

Essex Administrative County.—Sen. Clin. Tuberc. O. £750.

Hoo Rural District.—Part-time M.O.H. £60.

Hospital for Sick Children, Great Ormond-street, W.C.—H.S. Also H.P. Each at rate of £50.

Hove Hospital, Sackville-road.—Res. M.O. £175.

Lindsey County Council.—Locum Tenens Asst. Sch. and Tuberc. O. at rate of £600.

London Hospital.—Head of Children's Dept.

Patna, India, Medical College.—Prof. of Pharmacology, Prof. of Anatomy, and Prof. of Physiology. Each Rs.1200 per mensem.

Queen Mary's Hospital for the East End, Stratford, E.—H.P.'s and H.S.'s, &c.

Queen's Hospital for Children, Hackney-road, Bethnal Green, E.—Asst. S.

Royal Free Hospital, Gray's Inn-road, W.C.—Asst. Cas. O., H.P. Also two H.S.'s.

Royal Northern Hospital, Holloway, N.—Two Asst. Surg. O.'s. Each £75.

St. Bartholomew's Hospital Medical College.—Lecturer on Pharmacology and Therapeutics.

Salford Royal Hospital.—H.S., H.S. to Gynæcological, &c., Depts., and H.P. Each at rate of £125.

Sheffield, Jessop Hospital for Women.—Asst. H.S. at rate of £100.

Sheffield Royal Hospital.—Res. Surg. O. £200.

South-Eastern Hospital for Children, Sydenham.—Asst. P.

South London Hospital for Women, South Side, Clapham Common, S.W.—Asst. P.

Surrey County Council.—Asst. M.O.'s in Public Health Dept. £600.

Wandle Valley Joint Hospital Board Isolation Hospital, Beddington Corner, Mitcham Junction.—Res. M.O. £400.

West Bromwich Union Infirmary, Hallam-street.—Sen. and Jun. R.M.O. £300 and £250 respectively.

West London Hospital, Hammersmith-road, W.—H.P., H.S., Aural H.S., and Res. Cas. O. Each at rate of £100.

Births, Marriages, and Deaths.

BIRTHS.

FICKLING.—On May 23rd, the wife of E. L. Fickling, M.R.C.S., L.R.C.P., L.D.S., of Brook-street, W., of a daughter.

GREENLEES.—On May 17th, at Buckingham-terrace, Glasgow, W.C., the wife of James R. C. Greenlees, D.S.O., M.B., B.Ch., of a daughter.

HARVEY-WILLIAMS.—On May 21st, at Lisnamoe, Hitchin, Herts, the wife of Robert Harvey-Williams, F.R.C.S. Edin., of a son.

MACARTHUR.—On May 17th, at Wigmore-street, W., the wife of Bt. Lieut.-Colonel W. P. MacArthur, D.S.O., R.A.M.C., of a son.

DEATHS.

BATE.—On May 21st, at Surbiton, Edwin Beresford Bate, M.B. T.C.D.

SOUTTER.—On May 16th, Dr. Mansfield Knox Soutter, of Avenell-road, Highbury.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Comments, and Abstracts.

THE AWKWARD AGE.*

By W. A. Potts, M.A., M.D. Edin.,
PSYCHOLOGICAL EXPERT TO THE BIRMINGHAM JUSTICES;
HON. PHYSICIAN TO THE TAVISTOCK CLINIC FOR FUNCTIONAL NERVOUS DISEASE.

The awkward age is the period from 11 to 21 years of age. There is no real character at birth, but it may be fully developed at 21. Some consider the character fully developed by 18, but we shall be nearer the mark if we say character growth should be completed at 21 in the young woman and 25 in the man. As a matter of fact, character growth has never gone its full distance except in the case of that rare person, the perfectly normal individual, whom no one has yet seen. We are all in our psychological age or character development years behind our chronological age. If you do not agree you should think very carefully about some of your adult relations or friends whom you know best. It is impossible for most of us to see it in ourselves as we are too close to what we want to see, but it is not so difficult sometimes in regard to others, particularly men; women, especially those who have a strong maternal instinct, often develop psychologically beyond their male companions. It is a common observation of many wives that their husbands remain just big boys. This is not a delusion but a true observation. The boys may be successful in their business or profession and lead satisfactory lives, for they often have been well trained, but remain just big school-boys, a source of unconscious disappointment to their better developed mates, who hoped, and often still believe, they have got a strong sensible man. If you doubt this, you should observe a group of men in the army, in their clubs, and at their sports, especially at golf, which is one of the most serious businesses of life. And if you still doubt you should compare men with women in their clubs, or better still in their debating societies, or best of all in their own homes, where their work never ends, but where there must always be peace when father returns from his arduous work in the office.

The First Stage of Life.

When the child is born it is at first as much a part of the mother as it was before birth; during the earliest years of life it cannot exist apart from the mother, who herself, at first out of herself provides its food, cleans it, keeps it warm, and regulates its whole life. If the mother dies at this stage the baby inevitably dies too, unless some substitute takes the mother's place. This early time in life is so simple and easy for the child, who has every want supplied, if not anticipated, that it is often spoken of as Paradise. It is the stage of life to which we all unconsciously yearn to return. What does the married man in financial difficulties occasionally do but think how he missed his chance with the plain girl with the dollars, who was so obviously interested in him, when he foolishly threw in his lot with his more capable, but penniless, wife. In a similar way the young married woman who has had a tiff with her husband suddenly remembers that she has quite forgotten her father, who is not being properly cared for in the old home—dear old father, who was always so kind and understanding, who often wrote cheques before he was asked, and could never refuse his favourite child a new frock; then she runs away for the week-end from reality and her husband, back to her indulgent old father—back to Paradise.

The Maternal Instinct.

I have already indicated the great value attached to the maternal instinct, the most beautiful of all instincts. The tragedy for the mother is that the time for its full exercise is so very short; in the early years of the child's life she must begin to teach it to grow away from her and gradually to become independent. The curve denoting the degree of attachment to the mother falls rapidly; by 7, one of the many crises of life, it should be diminished. About 12 the mother sees her boy transfer his main interest and affection from her to his father for the next year or two; if the child is a girl the mother is left in the lurch even earlier, for at 10 the girl's emotions should be centred round her school companions. I cannot do more than briefly indicate this emotional development; those of you who are specially interested will find it well described in Dr H. Crichton-Miller's book, "The New Psychology and the Parent." Much of the child's future success and happiness depends on wise handling by the mother during this difficult time. She must have broad views and look into the future. If she does give the child wise help, he may—indeed, must—leave her for a time, but will come back when he has really grown up, honouring her as the wisest, kindest, and best guide, counsellor, and friend he ever had. The mother must watch that she never selfishly clutches her child after 7, and worst of all between 14 and 21, with that strangle-hold so fatal to individual development. That hold, far too common, is a heavy handicap for the child till he has fought free of it, which he should not have to do. Till he is free he cannot make the best of his talents, and will not go to his mate, when he marries, prepared to be the master in his own house. One difficulty is that the child both wants to get away and develop, but also unwittingly clings to the mother; all children are afraid of life and of facing the great adventure it involves. From our earliest days fear, especially of the unknown, is a bigger factor in our mental horizon than most of us would like to admit.

Pleasures connected with children are among the purest and best in life. But we can only have those pleasures for a short time. Family life is the ideal way of training the child for life, but we must remember that after 10 the child must leave the parents more and more; if they hold him back, if mother still expects to share all his school experiences, he will never develop esprit de corps, or keenness for his house and school. Still less can he appreciate patriotism, or grow beyond that, so that he can say with Edith Cavell, *Patriotism is not enough; and accept the League of Nations* and all that connotes. The mistake of so many parents is, not that they over-estimate the importance of home and family life, but that they fall into the error of thinking their family life must go on for ever, forgetting that the family life should only be an epoch in their own lives, and still more only a short period in the lives of their children, who at 21 should be adult individuals, preparing to establish their own homes and to train their own families. The mother means to be so unselfish, and yet it is largely selfishness that makes her afraid her boy is too delicate or too generous or kind-hearted to be trusted alone in this wicked world.

Some Cases in Point.

Just one or two instances from actual life. A middle-aged woman, who had never met her fate, dreamt that she was having breakfast with her father and her sisters. They were in the dining-room having a really good meal, while her mother, looking old and ill, was running in and out of the kitchen, cooking all kinds of delicacies for her husband and children and waiting on them all. This dream was a great surprise to her, because *her mother had never done* such a thing in her life. Actually, the mother had been for years a chronic invalid, waited upon by a devoted husband and children, and had ultimately died after a long illness. To some, perhaps, a beautiful picture of devotion, but the irony of it is that the daughters have never married, and one has had a nervous breakdown. The one who dreamt the dream has some chance, for the mother looking old and ill in the dream means not the actual mother, but that the undue attachment to the mother is being realised at last as a sickly and ageing influence, whose spell may soon be broken.

One of the worst examples I ever saw was a healthy middle-aged woman who was wearing out both her husband and a kind doctor by so called heart attacks; she actually took her 16-year old daughter away from a boarding school to come home and wait on her; the girl was not allowed to go to dances because her mother had panics that she would have an attack whilst her daughter was out. The mother had the opportunity of treatment for her nerves, but very soon gave it up, the unrecognised desire to remain in the centre of the picture being too strong.

A young woman, a typist, was once brought to me by her mother because she was becoming unduly self-centred and unsocial. The father was dead, the only other child, a boy, was doing well in the colonies. Mother and daughter lived together. The strangle-hold on the latter had nearly crushed the daughter's ability and independence. She must have shown possibilities at one time, because about a year before the head of a firm where she had been employed sent for her to say he was going to enlarge the business and wanted to have a much bigger office and office staff; he wanted her to come back and be the head of this new office. She refused because she felt the responsibility would be too great. When she would not undertake the work the man let the scheme drop; so I told her she must write to him, say she had thought it over and would take up the post if he still wished it. But she never could bring herself to write the letter or to go and see that man, she said she was satisfied with her present post and salary and would stick to them. I explained to her that that was impossible, because we never can remain stationary in life, but must always be advancing or regressing, and told her that unless she roused herself she would get a polite note one day to say that in view of increased costs her salary must be reduced; she then said, "That little note has already come."

In contrast to such a downward career I could tell you of other young men and women who, sometimes in opposition to father's and mother's wishes, despite the advice of friends, have left the easy job with an assured pension to take the post, little or no better for the moment, in which they visualised possibilities.

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* Being a lecture given to the Birmingham Branch of the Parents' National Educational Union on March 9th, 1925.

Duties of the Father.

But *you must not think that only the mother is to be blamed for failure in life; fathers are just as bad, and often worse.* One, *telling me about his family,* said he had a beautiful relationship with his 17-year-old daughter; after she had gone to bed at night he would go up and sit on her bed; she would put her arms round his neck and hug him and say, "Daddy, I love you so much—I shall never want to get married, I shall always stay at home and cherish you." He was surprised when I told him it was not good relationship, and that he must watch for an opportunity of saying to her: "If you really love me, you will look forward, and in every way prepare yourself for the time when you will have left home, and will send for me to lay in my arms your own little baby, the most wonderful treasure you ever had."

A bad case was a man of 50, a bachelor, supporting his sisters, who lived with him. His father had only a very small income. The whole family life centred in the father. Soon after the son had come of age he went one day and said to his father: "Father I have made up my mind I will never marry, but will work always to support my sisters." The father replied: "You dear boy, now I can die happy." It was all wrong. The man who can only earn very little has no right to let his daughters grow up unable to support themselves. *Fathers ought not to shelve their duties and* pass them on to their sons. *The drag on the son was such that he became more and more ineffective, and ultimately so useless that the firm to whom he had given devoted services for many years welcomed an opportunity of pensioning him off.* In this case I *am not* prepared to say the trouble was all due to upbringing and environment. I did not see the man till he was 50, and for all I can tell he may never have had much inborn ability or strength. Environment in childhood and during the awkward age is very important, but we cannot ignore the influence of heredity too. A few lucky individuals are born so strong that the worst possible home environment cannot keep them back.

Another hopeless case was a middle-aged woman convicted of a criminal offence. She did her work conscientiously all day and in the evening went home to slave for a drunken father and an incompetent mother. When I was speaking to her about the various values in life she said: "I think the important Commandment is the *Fifth.*" What is the Fifth Commandment? She replied: "*Honour your parents and work for them as long as they live.*" This woman might have been helped years *before*, but it was then *too late.*

The Home Influence.

Many people do not realise how the father and mother influence develops in early childhood. The adolescent does not realise it either, though he may have a glimmering of understanding. A young woman was going to be married in a few weeks to a man who meant a great deal to her. Yet the nearer the marriage the more bad-tempered and deaf she became. There was only *slight deafness*; the greater part was due to her "nerves," *as was also her temper.* It transpired at the *first interview that her fiancé had told her* that though he would *make other arrangements for the first year, after that his widowed mother must live with them.* Here was the cause of the nerves. Finding that he had married sisters who were capable, if necessary, not only of housing the mother, but of keeping her in her place, I told her that she must tell the man it could not be. "Must I really break off my engagement if he won't agree?" she said. I told her she must be prepared to do so, though probably it would never be necessary. Fortunately it was not. The bachelor who wants to propose but cannot, the man who breaks off his engagement, perhaps shortly before the date fixed for the wedding, and *also the young woman who cannot* accept the right *man, or goes on philandering* with the wrong one, are often *still fettered* by parental chains.

The *first idea* I want to put before you is that home influence, like *another* force to be considered directly, is *meant to be constructive*; if it is misdirected and abused, then it becomes not constructive but hopelessly destructive. When a great Englishman died a few years ago much was written about his beautiful devotion to his mother, whom he either visited or wrote to every day of his life. Some of us thought his life would have been more noble if he had been faithful to his wife and a little *less* devoted to his mother. The Don Juan type is *often an undeveloped person, who* has been so spoilt that *he is always looking for mere* gratification, and *cannot* reach any large conception of life and duty. He finds no peace in life because he is not aiming at a satisfactory and harmonious combination of all the urges in him.

Development of the Individual.

The aim of training and education is to develop individuals, men and women, who can stand *alone* and be *effective for* life. When we speak of being individual there comes to some minds the idea of selfishness. But real individuality implies not selfishness, but the highest altruistic motives. Confusion arises because some think individuality means individualism. Now, individualism is merely the reaction to collectivism; if people are coerced beyond a certain point, they kick over the traces altogether. Individualism is seen at its best—or worst—in America, where as soon as prohibition was established, young men and women, so it is said, were brought home drunk from dances; they did not drink to excess because they really wanted excess, still less because they believed it would do them good and help their development, but as a reaction to extreme collectivism, which was seeking to regulate every detail of life. Individuation, *on the other hand, is a word employed by Dr. Jung, of* Zurich, *to describe the result of the individual being encouraged,* helped, *and left free to develop all that is in him, so that he can become an effective individual, making the best of himself and also realising he has a duty to humanity. "Since the individual is not only a single separate being, but by his very existence,* also presupposes a collective relationship, individuation must lead to a more intensive and universal collective solidarity, and not to mere isolation." Before individuation can be taken for a goal, the educational aim of adaptation to the necessary minimum of collective standards must first be obtained. It has been well said that: "A plant which is brought to the fullest possible unfolding of its particular character must first of all be able to grow in the soil wherein it is planted."

Enforcement of Discipline.

Just *a word* about discipline and how far the parents should *combine* to teach it. Discipline must be enforced *from* the first day of life, chiefly by the mother, but the father must do his part and support the mother in every possible way. Till 7 years or thereabouts the parents should represent a single directing force to the child; between 7 and 14 the parents should gradually cease to show the child an uninterrupted front, for the school discipline is coming in; the mother is still the chief teacher, but in some matters the father should also teach, either separately or in a manner supplementary to the mother. But when the awkward age is reached, if the parents *have* omitted to enforce discipline before, it is too *late*; *they must stand by and watch* the boy they neglected *to train at the right time learning* the discipline of *life in a more unpleasant and painful way by* being bullied *at school or ragged in* the army or at the university *or* in the office. It is not right after 14 for the parents *to combine* to bend the child they have allowed to get *out of* hand. He will instinctively regard their union as an unholy alliance which may drive him into unsatisfactory paths.

After 14 the difference between father and mother must be clearly shown, for during the awkward age the child must gradually learn through his parents that the two sexes have different ideals, and look at life from different angles. He should find out by observing them that *it is more helpful* to discuss some subjects with a man, others with the *opposite* sex, and that often *the most valuable process is to hear the* ideas of both *and differentiate* between them. In this way he or she *comes* to his mate, knowing that the two sexes never *can* look at life from the same point of view, and *dimly realising* in any particular circumstances which outlook will help the most.

Conclusion.

[Dr. Potts then wisely discussed modern views on sex instinct, and concluded:] We must *recognise there are* many forms of *sex expression.* Ordinary social intercourse is one, *and dancing is another,* of great value as an *outlet in* the awkward age. Barrack or monastic life *too often* means running away from life and its problems; if so, it is no help, but often leads to serious complications. We ought to do all we can to make early marriage possible. The father should help his son to marry early, and not present the pitiable spectacle of a manager past his best, still directing the business, which is going down-hill, while the son, who could do more effective work, has to remain a subordinate, and *year after year tell* his girl that father *still hangs* on, *and so makes marriage* for them impossible. In *this connexion the choice* of a business or profession is most important. Parents often say *there is no definite taste*; this frequently means that the boy has a call to some work such as a minister, or farmer, an actor or a soldier, which the parents either despise as a calling or regard as too unremunerative for their wonderful offspring. Sometimes there does seem to be no *actual wish*; then it may be wisest to adopt the father's profession or business, because the chances are that some ability for

will be inherited. *Even if nothing special* appeals

must always be made; *the policy of waiting to*

up *is bad. If by any* chance the boy or

wrong career it will then be easier for them

If the life's work does not satisfy it must either be changed or some hobby of value made an important item in the life. There is now more than one way of testing aptitude for business or profession; in difficult cases these might be employed.

Sometimes parents, who rightly wish their daughter to get married, hesitate to let her do anything definite with a view to sublimation, still less take up a profession or business, because they think it will diminish her chance of matrimony. This is a mistake, because the developed woman, who has made the best of herself, is always more attractive to a real man who wants a companion for life and not a spoilt child.

In conclusion, I would suggest to you that the idea to put before your children is that life is a great and glorious adventure; if we regard it as that, and face our problems and think them out, and also get all the understanding we can, then, though passing through life may involve many hardships and many difficulties, yet the goal at which we aim is worth all the toil and dangers.

ENDOCRINE TREATMENT OF ECTOPIA TESTIS.

To the Editor of THE LANCET.

SIR,—One frequently comes up against a case of ectopia testis in practice where the parents are very desirous of avoiding surgical assistance. During the past few years I have prescribed "mixed glands" tablets (B.W. & Co.) (male), one nightly, in such cases, and it appears to me as if the descent takes place sooner than if left to nature. The last case I have had was a small undeveloped boy of 11, who took one tablet nightly for two years and whose right testicle finally took up its scrotal position three months ago. Is the endocrine treatment the only resort apart from surgical measures?

I am, Sir, yours faithfully,
JOHN WISHART, M.D., D.Sc.
Newcastle-upon-Tyne, May 12th, 1925.

A PECULIAR CASE OF "ALBINISM."

To the Editor of THE LANCET.

SIR,—I have seen in your issue of March 14th, recently received, an extract from a writer in *Man*, saying that he considers there is a local tendency to albinism, and that he has never seen an elderly adult case of albinism. In the town of Ilorin there are over 80,000 inhabitants, and without any search I could show you three elderly adult albinos, and I have no doubt there are more. The local belief is that they have been made so through the good offices of the Goddess of Agriculture, who also is supposed to frame the human body in the womb. The woman to whom such a child is born is very pleased, and carries it round on her back, and receives the alms of the inhabitants, as she walks through the town. There is no suggestion of any part played by the white man, and the matter is satisfactorily explained by the theory mentioned. The adults take their share in the business if females, but the males depend on the charity of the people, or in rare instances they act as buyers of cattle. The people of Nigeria believe in many more deities than the Gold Coast people, and this is probably the cause of the different opinions in countries which are so near to each other.—I am, Sir, yours faithfully,

J. R. C. STEPHENS,
Medical Officer, West African Medical Service.
Ilorin, Northern Nigeria, May 7th, 1925.

PERFORMANCE TESTS OF INTELLIGENCE.

IT is now well recognised that the scales of intelligence tests most generally used—those, that is, of the Binet type—are liable to yield fallacious results in the case of those whose command of words is restricted but who may have considerable capacity for industrial occupations. They are also almost entirely inapplicable to such special classes as the blind, the deaf, and certain speech defectives. To supply what is lacking in the Binet scales many investigators, particularly in America, have devised performance tests, which are intended, of course, to be not merely tests of manual dexterity, but tests of intelligence applied in this direction. These scales of performance tests, in which each test is designed to elicit a different quality of intelligence, have obtained some note, Pintner and Paterson's (1917), Dearborn's (1923), and that used in the United States army in war-time. In a report just issued by the Industrial Fatigue Research Board, Miss Frances Gaw, B.A., puts forward a new scale. It contains no new tests, a selection having simply been made from already existing sources. Nearly half of them are drawn from Pintner and Paterson's scale: Healy's already well-known picture and construction tests are included, as also the even better-known Porteus maze test. The scale has been standardised by an experimental trial upon the children of three L.C.C. elementary schools, but as all the tests are not applicable to all ages, some being too easy for the older children, others too difficult for the younger, the mental ages and intelligence quotients obtained by their use can scarcely be regarded as thoroughly dependable. Even, however, in this tentative form the scale will form a valuable addition to the certifying officer's armamentarium of tests. His only difficulty may be the very practical one of finding time to apply them to his subjects.

"HYGIENE JINGLES."

Dr. R. C. Everitt Atkinson, who is Commissioner of Public Health for Western Australia, has incorporated the rudimentary principles of hygiene and sanitation in the form of verse (Hospital Electrical and Radium, Ltd., Adelaide, pp. 48). Young children in Australian schools apparently spend ample time learning poetry, and the Commissioner jealously claims some of this time for the initiation in personal hygiene and preventive medicine which will give the child an accurately set health compass for life. To those who incline to scoff at his endeavour he replies that they might find it difficult themselves to write in verse elegantly of a rubbish bin, tragically of a mosquito, feelingly of a fly. Dr. Atkinson has really succeeded in writing some jingles which children are likely to read, and his little book is worthy of more attractive format and a competent illustrator.

PYOTROPIN FOR LUPUS.

IN the *Deutsche Medizinische Wochenschrift* for April 3rd Dr. Axmann (Erfurt) describes a new treatment for lupus with a preparation called pyotropin, which consists of a liquid and an ointment. The former contains a sediment of chalk with potassium phenolate and a little free carbolic acid in watery solution. In the ointment there are equal parts of salicylic acid and salicylate of soda with glycerine and sugar added to the base. The trial of pyotropin began in the early part of 1924, and cases which had proved intractable to caustics and various forms of light—those, in fact, in whom the prognosis appeared hopeless—were first selected. The average length of treatment was six weeks. Mucous membrane lesions (nose, ear, eye) appeared to yield with particular ease to the applications. On the whole, the author is satisfied that pyotropin is more efficacious in destroying lupus nodules, and at the same time simpler, cheaper, and safer to apply than all other remedies hitherto recommended. Pyotropin is stated to be non-poisonous. All the cases were treated as out-patients, so that the loss of time entailed was very small. Eighteen actual cases are reported in detail, and the results, according to Axmann, were flat, healthy-looking scars without residual or recurrent nodules, and comparable from the cosmetic point of view to the best Finsen-lamp effects. The method of application is not stated, nor is the question of pain discussed.

STANDARD SPELLING.

THE twenty-seventh edition has just appeared of the "Rules for Compositors and Readers at the University Press, Oxford," first issued by the late Mr. Horace Hart, M.A., Printer to the University, in April, 1803. The present edition, with spellings revised by Sir James Murray and Mr. Henry Bradley, is published by Mr. Humphrey Milford at 2*s*., and contains 135 pages. It is a most entertaining little book for any who are interested in the histology of printing. Punctuation is a frequent source of delightful or perplexing ambiguity. The story is quoted of Sheridan's apology to a Parliamentary opponent which was printed thus: "Mr. Speaker I said the honourable Member was a liar it is true and I am sorry for it." In this case it would not have been fair, as is usually done, to put the responsibility of punctuation on the compositor. Accuracy is carried to a point unimagined by those who only roughly scan the printed page. Nine or ten pages on alternative or difficult spellings contain distinctions which may be unfamiliar even to the practised writer. Who, for instance, would distinguish between the three forms of a familiar word (1) bogey (in golf); (2) bogie (a truck); (3) bogy (an apparition): and even the University Press fails to give help as to how the plurals should be formed. Some words in the list recall literary tussles: Mr. W. E. Gladstone, at first a champion of the spelling "forego," had ultimately to yield to the authority of Skeat and Sir James Murray, and frankly to admit "I give in." Especially agreeable to medical writers will be the list of spellings on pp. 25–32 for use in medical works, on many of which a difference of opinion no doubt is justified: but the mere fact of having a precise form set out will stimulate the writer to accuracy, either in agreement or disagreement. To those correcting proofs for the first time, p. 124 will appeal.

Relationship
BETWEEN
PNEUMONIA INCIDENCE AND CLIMATE IN INDIA.

BY SIR LEONARD ROGERS, C.I.E., M.D., F.R.C.P. LOND., F.R.S.,
LIEUTENANT-COLONEL, I.M.S. (RET.).

IN recent papers I have shown a close relationship between leprosy incidence and rainfall in India,[1] and between pulmonary tuberculosis and humidity and rain-bearing winds[2]; in the present communication I propose to deal with pneumonia on similar lines. Over a decade ago[3,4] I pointed out that phthisis and primary pneumonia in Calcutta were each responsible for about one-sixth of the total deaths in the Calcutta Medical College Hospital, as shown by an analysis of several thousand post-mortems, each causing a much higher mortality than any of the so-called tropical diseases; in my recent Finlayson lectures[5] I pointed out that the Calcutta vital statistics showed a still higher mortality from these two lung diseases, so their importance in India can scarcely be exaggerated. Moreover, my 20 years' post-mortem experience in Calcutta revealed that, except during a few months of the recent influenza pandemic, broncho-pneumonia was very rare, and the greatly predominating lobar form was essentially a disease of the prime of life, 70 per cent. having occurred between the ages of 21 and 40, and 97·3 per cent. between 11 and 60; so it may safely be assumed that among the jail population of over one and a half millions, with which I shall be dealing in this paper, among whom there are no children and few old people, a very great majority of the pneumonia cases were of the lobar form; for the 15 years' data from 1896 to 1910, from which the incidence shown in Fig. 1 are taken, are after the influenza epidemic of the early 'nineties and before the recent pandemic, over one-seventh of the total jail mortality during the period under review having been due to pneumonia, or about equal to the phthisis death-rate, and only exceeded by that from dysenteries. As the jail populations are under I.M.S. officers and post-mortems are made on fatal cases, they afford ideal data for studying the true incidence of pneumonia and other diseases in different parts of India.

INCIDENCE OF PNEUMONIA IN INDIA.

It has long been known that pneumonia is very prevalent, occasionally almost in epidemic form, in the North-West part of India, which has a much drier climate than the rest of India, while the extreme variations in rainfall, temperature, and degree of humidity in different areas of this vast country constitute India an ideal country for studying the influence of climate on disease incidence; for the annual reports of the Sanitary Commissioner with the Government of India record the rates per mille for a number of divisions, which were originally selected many years ago, through consultation, between the medical and meteorological authorities, as representative of the varying climatic conditions of India. As the rates per mille for pneumonia are usually very similar year by year in the same area, the average figures I have worked out from 15 consecutive years may safely be relied on as sufficient for comparative purposes, and the figures are given in the accompanying table and also entered in Fig. 1, which is shaded according to the scale shown in it, from which it will be seen that the distribution of the high, intermediate, and low rates are very clear-cut; and the difference between the lowest and highest rate is more than a ten-fold one; presenting a striking picture, lending itself admirably for comparison with the meteorological data for the various parts of the country.

A brief description of the incidence of the disease will suffice, the numbers in brackets after the name of an area representing its number in Fig. 1. The highest rate of just over 50 per mille is found in the Lower Indus Valley, or Sinde (7b) in the North-West of India; the adjacent North Indus Valley (7a) and Gujerat (8a) areas show the next highest rates of over 25 per mille; these three areas are shaded uniformly dark in the map, while Baluchistan still further west has the highest pneumonia rate in the Indian Army, but is left unshaded as no jail figures are available for it. The next highest rates of 20 to 25 per mille are found in the two divisions immediately to the east of the areas of highest incidence just dealt with—namely, the Upper Sub-Himalayan (6) and Central India (8b), shaded with crossed lines; to the east and south of which there is a remarkable drop to below 15 per mille, or approximately the average rate for all India of 13·3 per mille, no intermediate figures of 15 to 20 being found, thus marking off the north-west area of exceptionally high incidence very clearly.

The areas of average incidence, 10 to 15 per mille, are shaded with single horizontal lines, and include the Central Provinces (9a), the Gangetic Plain and Chota Nagpur (5), Bengal and Orissa (4) and North-East Madras (11c) forming a solid block of the North-East of India proper, with the exception of Assam and Upper Burma. The remaining divisions still further south and east show rates below the normal, including Assam (3), the Deccan and Berar (9b), the Western Coast (10), and Central Madras (11a) with rates between 7·5 and 10 per mille; and the extreme south-east divisions of Burma Coast (1), Burma Inland (2), and South-East Madras (11b) with the very low rates of under 7·5 per mille; a steady decline from the north-west to the south-east being thus clearly evident, which must have some definite cause.

SEASONAL DISTRIBUTION OF PNEUMONIA.

We next require to know the incidence of pneumonia in the three very definite seasons of the year; the four dry cold months of November to February, the four hot dry months from March to June, during the last week or two of which the monsoon begins to spread over India, and the four wet equable months of July to October, during the last of which the monsoon gradually withdraws from Northern and Central India, and the comparatively feeble north-east monsoon becomes established over the south-east portions of the peninsula (11a and 11b). The table gives the percentages of the total 14,266 cases of each of these equal periods of time for every division, which would give an average of 33·3 per cent. for each season; the figures bring out the following interesting points. The total cases show the highest incidence of

Table Showing Seasonal Incidence and Yearly Rates Per Mille of Jail Pneumonia.

Division.	Cold season Nov.–Feb.	Hot season March–June.	Rainy season July–Oct.	Yearly rate.	Case-mortality.
	Per cent.	Per cent.	Per cent.	Per mille.	Per cent.
1. Burma Coast	35	37	28	4·2	39
2. Burma Inland	36	42	22	6·4	29
3. Assam Valleys	22	42	36	7·6	36
4. Bengal and Orissa ..	42	33	25	13·4	28·5
5. Gangetic Plain and Chota Nagpur ..	43	33	24	12·1	23
6. Upper Sub-Himalayan ..	53	29	18	22·0	23
7a. Indus Valley North	51	31	18	25·8	26
7b. Indus Valley South	60	25	15	50·2	
8a. Gujerat	43	36	21	25·5	23
8b. Central India				2·22	
9a. Central Provinces ..	40	30	30	12·1	25·5
9b. Deccan and Berar ..	45	34	21	9·2	
10. Western Coast	31	41	28	8·1	30
11a. Central Madras ..	31	35	34	8·2	24
11b. S.E. Madras	43	29	28	5·8	
11c. N.E. Madras	33	32	35	14·0	
All India	45	31	24	13·3	26

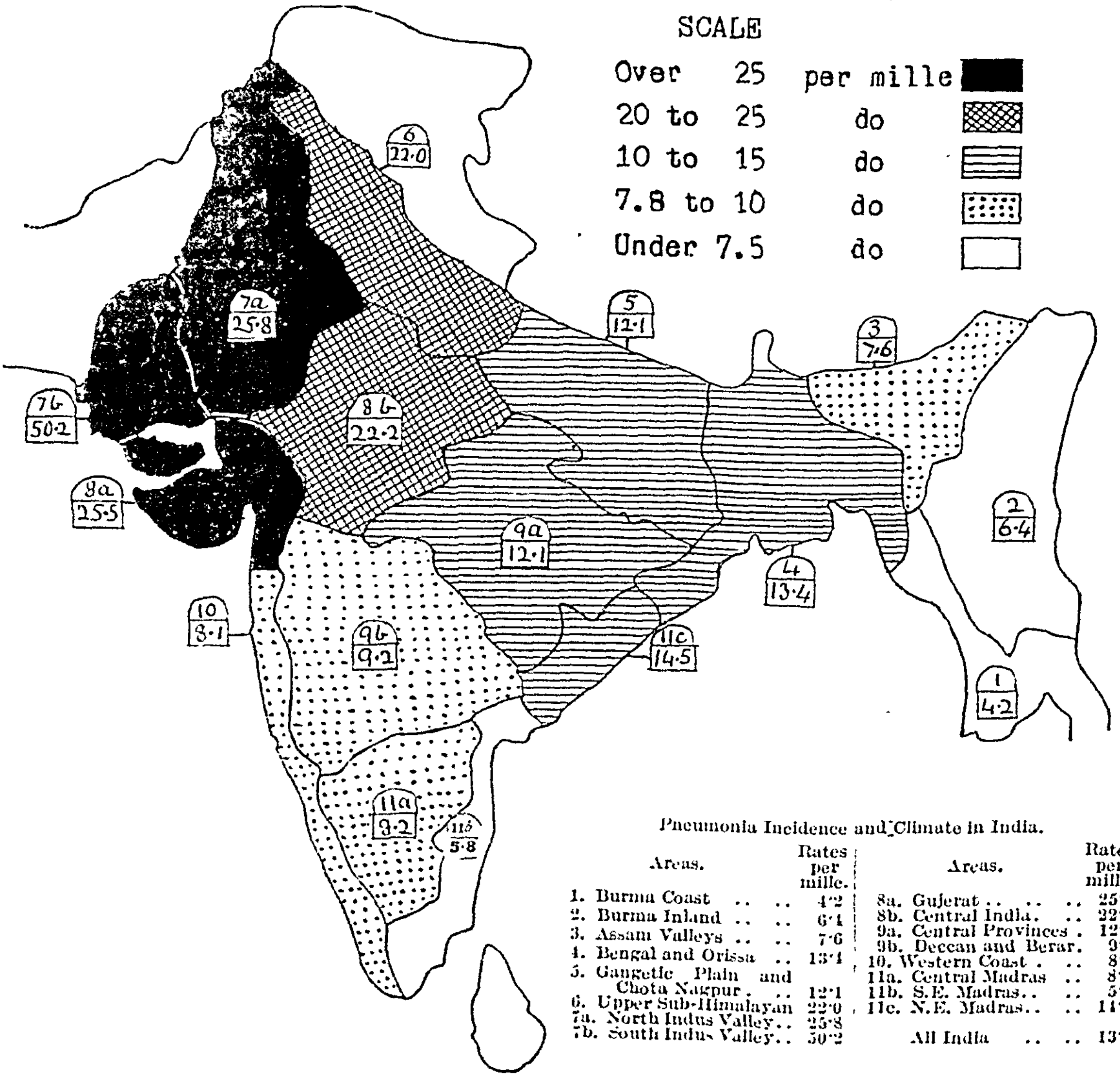
45 per cent. in the four dry cold weather months, an approximately average incidence of 31 per cent. in the hot dry season with wide diurnal variations of temperature, especially during the occasional rain storms, and the low rate of 24 per cent. in the four warm equable rainy months. Turning to the figures for the different divisions, we find the cold weather incidence much below that of all India in just those areas in which the annual rate per mille is lowest—Burma, Assam, and Southern India; the percentages are about the average in Bengal, the Gangetic Valley, and the Central Provinces, with average annual pneumonia rates; but the cold weather percentages are in excess in the Upper Sub-Himalayan and Indus Valley divisions, where the highest pneumonia rates occur, the greatest proportion of 60 per cent., or nearly double the average, being met with in the South Indus Valley with by far the highest pneumonia incidence. It is therefore evident that we must look to the cold weather climatological conditions to furnish the clue to the excessive prevalence of pneumonia in North-West India and examine them in the two coldest months of the year, December and January, with the highest number of pneumonia cases, when they show 59 per cent. excess of the average monthly rates for the whole of India, and up to 100 per cent. excess in the high incidence north-west divisions.

CLIMATOLOGICAL CONDITIONS INFLUENCING PNEUMONIA DISTRIBUTION.

Rainfall.—Fig. 2 shows the distribution in inches of the annual rainfall of India, from which it at once appears that the high pneumonia north-west area has the most scanty rainfall, but as the monsoon period shows a very low proportion of pneumonia in these divisions, the actual amount of rain does not appear to have much direct effect on the incidence of the disease.

Humidity.—The same high pneumonic area also has the lowest absolute humidity, as compared with other divisions, of 0·800 in the rainy season, as was illustrated in Map 1 of my recent paper on Tuberculosis Incidence and Climate in India,[2] but the study of this factor during the maximal pneumonia cold weather is of far greater importance, and consequently Fig. 3 shows the January absolute humidity, as measured by the mean daily aqueous vapour pressure, when the lowest readings of 0·300 and less are limited to precisely the north-west

FIG. 1.



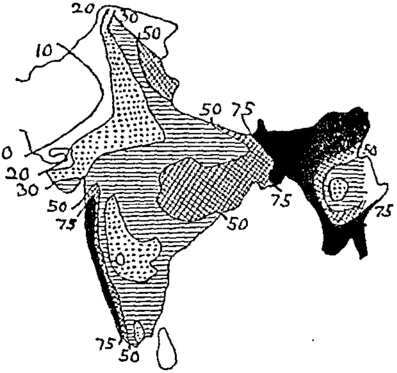
Pneumonia Incidence and Climate in India.

Areas.	Rates per mille.	Areas.	Rates per mille.
1. Burma Coast	4·2	8a. Gujerat	25·5
2. Burma Inland	6·4	8b. Central India. ..	22·2
3. Assam Valleys	7·6	9a. Central Provinces .	12·1
4. Bengal and Orissa ..	13·4	9b. Deccan and Berar.	9·2
5. Gangetic Plain and Chota Nagpur . ..	12·1	10. Western Coast . ..	8·1
6. Upper Sub-Himalayan	22·0	11a. Central Madras ..	8·2
7a. North Indus Valley..	25·8	11b. S.E. Madras.. ..	5·8
7b. South Indus Valley..	50·2	11c. N.E. Madras.. ..	14·6
		All India	13·3

area of high pneumonic incidence of over 20 per mille, the lowest rate in India at any season of the year of 0·250 and under, indicating an excessively dry climate, being met with in the extreme north-west in the divisions with over 25 per mille of pneumonia. Moreover, the cold weather humidity steadily increases with the decrease in the pneumonic rate as we proceed east and south, to reach its highest readings in the areas of lowest pneumonia incidence in South-East Madras and Lower Burma; so the cold weather humidity appears to be an important factor to be considered in any explanation of the incidence of pneumonia in India, for the hot weather annual humidity in India shows a very similar relative distribution to the above described cold weather readings, that is during the seasons when over 75 per cent. of the pneumonia cases occur, and differs but slightly in the monsoon months of minimum pneumonia prevalence.

Cold Weather Minimum Temperatures.—I now turn to the temperature conditions during the maximal pneumonia cold season, which are illustrated in Figs. 4. and 5. Firstly, Fig. 5 illustrates the absolute minimum temperatures in January, with the lowest readings and slightly the highest number of cases of pneumonia, while the temperature distribution in December is almost exactly similar. Once more it is quite clear that all the highest pneumonia rates occur in the coldest north-west divisions, with a minimum temperature of 35° F. or less, while the rates steadily diminish as we pass west and south into warmer areas; nearly all the average pneumonia rates are found in areas with minimum temperatures down to 45°, and the lowest incidence is in South-East Madras and Lower Burma with minimum temperatures of 50° and over. It is therefore clear that low minimum cold weather temperatures favour the prevalence of pneumonia in India and vice versa.

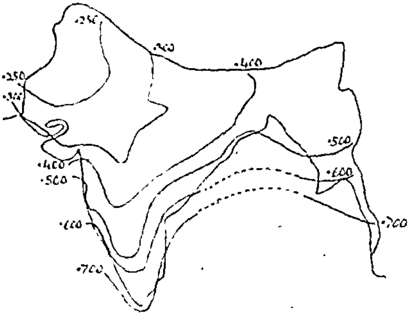
FIG. 2.



Rainfall in inches.

Diurnal Variations in the Winter Temperatures.—Fig. 4 also illustrates the still more important factor of the diurnal variations in the temperature in the month of December, when a great rise in the pneumonia cases takes place and the highest monthly number is recorded in the areas of high incidence, the cause of which I desire to elucidate; January has a closely similar temperature and pneumonia distribution. Once more a glance at the maps shows a most remarkable coincidence between the north-west areas with the highest diurnal variations of temperature of 30° and upwards in the cold season, and of the greatest pneumonia incidence; the next highest diurnal temperature variation of 25° and over covers nearly all the other divisions with about the average pneumonia incidence. On the contrary, the areas of rather low pneumonia have moderate diurnal variations of temperature, and the very low pneumonia areas of South-East Madras and Lower Burma are precisely those with the least diurnal variations of temperature in the cold months and also in the hot weather season. Moreover, in the rainy season of minimal pneumonia rates in all India the diurnal variations in India are much less than at any other time of the year, very rarely exceeding 20° during the monsoon months except in the extreme North-West of India, which the rains scarcely affect. We may therefore conclude that a great diurnal variation of temperature, combined with a low minimum in the cold season, together with a very low degree of humidity, constitute the principal climatological conditions associated with an excessive incidence of pneumonia; precisely the opposite conditions hold with regard to the lowest prevalence, and intermediate readings coincide with moderate occurrence of the disease.

FIG. 3.

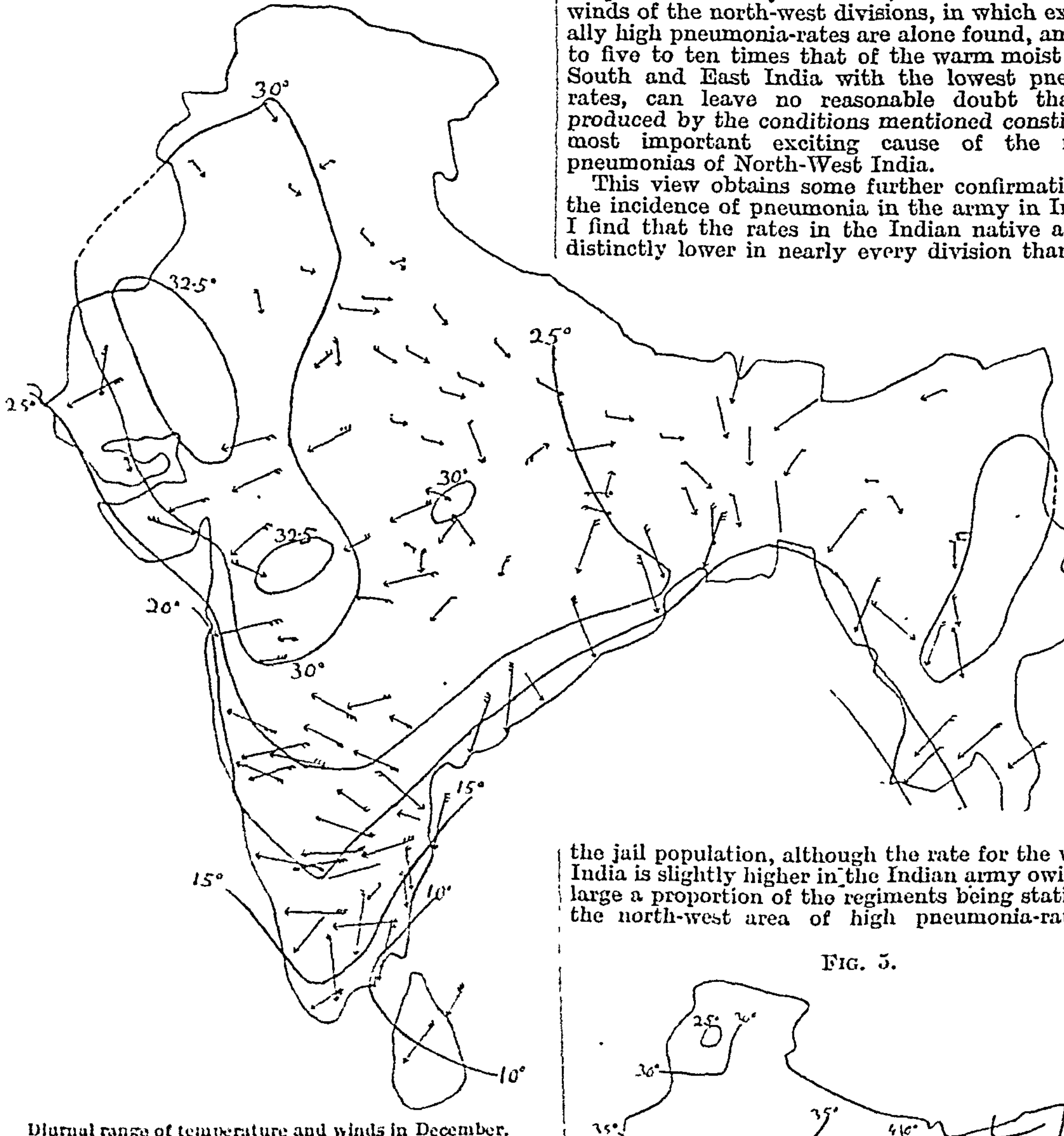


Absolute humidity or mean aqueous vapour pressure in January.

Direction of the Winds.—One other influencing factor is also illustrated in Fig. 4, in which the arrows represent the direction of the winds in the same month, December, their length being in proportion to the constancy, and the number of the feathers increase with their strength, the data in this and the other maps being taken from the Government Climatological Atlas of India, based on 20 years records. It will be observed that throughout the north of India the winter winds blow for the most part from the north to the south, south-east, or south-west; in the southern part of the peninsula, on the contrary, they mainly blow from the east from over the warm Bay of Bengal, and it is noteworthy that the cold north winds extend down only as far as the north-east portion of Madras (11c), exactly as far as an averagely high pneumonia-rate is found; south of this a very low incidence occurs with mainly warm east winds. Cold north winds, therefore, appear to be a further factor favouring high pneumonia-rates.

Variations in Case Mortality.—In the last column of the table I have entered the case mortalities of the main areas, which bring out an interesting point; for all the high percentages of deaths occur among the cases of the warm humid divisions with a low incidence of pneumonia; 39 per cent. in the Burma coast area (1), 36 per cent. in Assam (3), 30 per cent. on the west coast (10), 29 per cent. in Burma Island (2), which is less humid than the others just mentioned, and 28·5 per cent. in Bengal and Orissa (4). On the contrary, the very dry cold areas, with high pneumonic incidence, have low or average case mortalities, so it would appear that a dry climate is favourable and a humid one unfavourable to the progress of the disease. Unfortunately, only the monthly numbers of cases are recorded and not the death-rates, so I have not been able to ascertain if the case mortality from pneumonia is higher in the rainy than in the dry seasons of the year; it would be of interest if this could be ascertained.

FIG. 4.



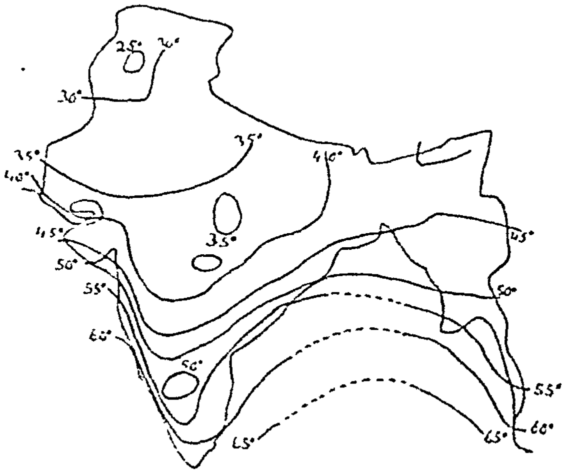
Diurnal range of temperature and winds in December.

EXPLANATION OF THE RECORDED DATA.

In my long pathological experience in Calcutta lobar pneumonia was invariably due to the pneumococcus, and R. H. Malone has recently reported[4] a serological examination of 106 strains obtained in North-West India, and found 28·3 per cent. of type I., 17 per cent. type II., 7·5 per cent. type III., and 17·2 per cent. of the unclassified type IV., one-fourth of which belonged to a single subgroup. This class of organism has a widespread distribution in the throats of human beings, and the onset of pneumonia has for long been attributed to lowering of resistance to the organism by chills, &c. The facts brought forward in this paper are fully in accordance with that hypothesis, especially in view of the habit of Indians washing in the cold early mornings in the open, clothed only in their thin cotton dhoties, or loin cloths, which are allowed to dry on them. The low minimum temperatures, combined with a remarkably wide diurnal variation of temperature, exceptionally dry atmosphere resulting in cooling through rapid evaporation of any moisture, and the cold northerly winds of the north-west divisions, in which exceptionally high pneumonia-rates are alone found, amounting to five to ten times that of the warm moist areas of South and East India with the lowest pneumonic-rates, can leave no reasonable doubt that chills *produced by the conditions mentioned constitute the* most important exciting cause of the frequent pneumonias of North-West India.

This view obtains some further confirmation from the incidence of pneumonia in the army in India, for I find that the rates in the Indian native army are distinctly lower in nearly every division than among the jail population, although the rate for the whole of India is slightly higher in the Indian army owing to so large a proportion of the regiments being stationed in the north-west area of high pneumonia-rates, the Sepoys being better clothed than the jail population. Further, the British troops are better clothed and far better housed than the native troops—for the latter commonly wear only their own thin cotton

FIG. 5.



Absolute minimum temperature in January.

clothing when off duty as well as at their morning open-air ablutions—so it is noteworthy that the British army pneumonia-rate for the whole of India is only 4·03 per mille, against 13·57 in the Indian army, in spite of so many of the British troops being stationed in North-West India during the cold winter, and most of them go to the hills for much of the year, where the pneumonia-rate is also high. It is of interest to note that the pulmonary tuberculosis distribution is almost exactly the opposite of that of pneumonia—namely, in the warm humid monsoon-swept divisions as shown in my recent paper.[6]

The relationship of pneumonia to great diurnal variations of temperature with a low minimum is also in accordance with the well-known frequency of pneumonia in Egypt due to chills induced by the very rapid fall of temperature after sunset, and Dr. Andrew Balfour informs me that the same is true of the dry areas of the Sudan. Forewarned is forearmed, so if the evidence brought forward in this paper leads to the more general recognition of the danger of chills under such conditions, and the necessity of guarding against them, many valuable lives may be saved, and one of the most serious causes of mortality in the world may in some degree be mitigated.

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SKIN TESTS,

ASTHMA AND IDIOSYNCRASY.

BY F. G. CHANDLER, M.D. CAMB.,
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HOSPITAL; PHYSICIAN, CITY OF LONDON HOSPITAL
FOR DISEASES OF THE HEART AND LUNGS,
VICTORIA PARK, E.

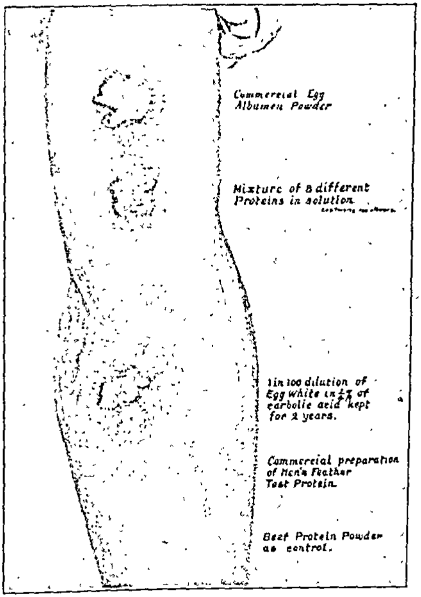
I BELIEVE that along the path of the study of idiosyncrasy great discoveries will be made. Certain obscure diseases which have hitherto defied convincing explanation may become elucidated. Under this denomination I would place asthma, migraine, recurrent urticaria, so-called essential œdema, perhaps cyclical vomiting, and other gastro-intestinal disturbances, eczema, and other skin diseases. There is no doubt that many skin eruptions are directly attributable to idiosyncrasy, and with some attacks of asthma the ætiological relationship seems as certain. It is necessary, however, to be critical, and not to be carried away by enthusiasm; for crazes in medicine are not creditable, and history contains too many examples.

The tests for discovering an unknown idiosyncrasy are so laborious, the chances of obtaining a truly positive reaction so precarious, the work and expense entailed in the preparation of suitable test substances so great, that the following points become of paramount importance: (1) Technique. (2) Confidence in the "activity" of the test substances. It is proposed to deal with these points and with the following:—The significance of the reaction. The therapeutic application of a proved idiosyncrasy. The efficacy of certain commercial test proteins.

Technique.

(*a*) *The Test Substance.*—If the test substance is in liquid form this is placed directly on the arm, which has previously been cleansed with ether. If in powder form a few drops of decinormal soda are placed on the arm and a few grains of the powder added to this. If dried on blotting-paper after the method of Freeman, a few drops of decinormal soda are used as above, the epidermis pierced in the manner to be described, and the square of blotting-paper placed on the soda solution. If the crude substance is to be used as a test, it can be ground up with decinormal soda and the test made with this. If desired it can first be shaken up with ether.

(*b*) *Method of Piercing the Epidermis.*—To ensure uniformity it is essential to have ocular evidence that the epidermis has been pierced. A mere scratch is unsatisfactory, as it is difficult to be certain that all parts of it are equally deep. I therefore use the following method. After placing the test substance on the arm as above a sharp needle is taken and the skin pricked very lightly and quickly with the point several times. In a few moments petechiæ appear, and these are clear evidence that the epidermis has been pierced, and each tested area may be made uniform. There is no pain if done carefully, and the method is therefore a good one for children.


Commercial Egg Albumen Powder
Mixture of 8 different Proteins in solution
1 in 100 dilution of Egg white in ½% of carbolic acid kept for 2 years.
Commercial preparation of Hen's Feather Test Protein.
Beef Protein Powder as control.

Reactions in an individual extremely sensitive to hen's egg, duck's egg, and hen's feathers. Counting from above downwards: Reaction 1 was obtained from a few grains of commercial egg albumin. Reaction 2 was obtained from a solution of eight different proteins, the individual being sensitive to the egg protein only. Reaction 3 proves that a solution of egg-white in ½ per cent. carbolic acid will retain its "activity" for at least two years. Reaction 4 shows the failure of a commercial preparation to give a convincing reaction. A Victoria Park preparation of hen's feather protein powder in decinormal NaOH produced a reaction as big as 1. *Reaction 5 a control.*

(*c*) *The Type of Reaction* is seen from the accompanying illustration. The reaction must be unequivocal—no self-deception must be possible. If there is a true idiosyncrasy the reaction will be a large one.

(*d*) *Method of Group Testing.*—It is clearly impossible to test all the individual proteins separately. Theoretically any bird, beast, or fish, plant, tree or flower, fruit, vegetable, or fungus, may contain the offending substance. It is obvious, therefore, that unless they are grouped in some way the task of testing is impracticable. Clinical considerations may enable us to exclude certain things. For example, if attacks of asthma occur nightly they are not likely to be due to turkey or grouse, and if they occur only occasionally it is improbable they are caused by hens' feathers or wheat. But even these exclusions will leave a very large number of things to be tested. Group testing is therefore imperative, and the best method of doing this has to be determined. Elegant preparations are offered by a few commercial firms, but some of these I have found inert. It appears that to be effective they must be of a certain strength. Some are easily prepared, others are not; and therefore fish and meat test proteins are apt to be more effective than animal hair preparations.

My own methods are as follows, and I believe them to be effective.

(1) Allied substances are ground up together and macerated in water with some crystals of thymol (e.g., all the common flat fish or all the common shell-fish). This is then filtered, the filtrate evaporated to dryness at 56° C. over a water-bath or in a vacuum, and the resulting powder ground up. This, used with decinormal soda, makes a good group test powder, consisting of proteins, salts, and other substances.

(2) Many proteins, of course, cannot be prepared in this way; not a powder, but a gummy syrup remains, which refuses to be desiccated by any process, or takes on the form of hard toffee. In this case one is compelled to redissolve in water while wet, and precipitate by alcohol or acetone, filter, and dry the precipitate in alcohol or ether. It must be ascertained that the fluid used is an equally good precipitant for each substance.

(3) A third method is to prepare the proteins separately in powder form, and then to mix them in equal quantities and dissolve or suspend in water or centinormal soda with carbolic acid ½ per cent. Such a "solution" is effective, and will remain "active" for at least three or four years, as will be shown later on. This is a most convenient way of performing the tests, and it is the one I am using at the present time, saturated solutions being employed.

(4) A simpler method is of use in some cases—viz., boiling several foodstuffs together and testing with the filtrate, but this I am investigating further.

As an example, beef, mutton, pork, and egg were pounded up together and extracted with water; this was boiled and then filtered. The filtrate was then concentrated by evaporation. This was used as a test solution on an egg-sensitive subject (C. L. P.) and an enormous dermal reaction resulted.

The illustration shows that the group test is effective. Other cases have given the same result. From several experiments made it is evident that eight different proteins may be mixed together for a single group test. If a positive reaction is obtained from the group solution, then each individual member of the group must be tested out.

Activity of the Test Substance.

It is essential to know that the test substance is active. Various names have been given to this property of giving a dermal reaction, or of giving a somatic reaction—e.g., urticaria, diarrhœa, asthma, &c. By analogy with anaphylactic phenomena this property has been called anaphylactogenic; this, however, presumes an unproven theory. I shall therefore merely call it active in the sense in which I am speaking—i.e., capable of giving a dermal reaction, or of producing the characteristic reaction in the individual possessing the idiosyncrasy to it.

The only method I know of testing this activity is to make a test on an individual with a known idiosyncrasy. The value of this is, of course, greatly limited. I therefore asked Dr. S. R. Gloyne to inject guinea-pigs with different substances—various fish proteins, egg albumin, oat protein, &c.—to see if we could produce a sensitiveness to these substances and so have a method of testing their activity. No such sensitive state, however, could be produced.

Since this was written, Dr. J. Freeman, of St. Mary's, has demonstrated a remarkable experiment upon himself. Intradermal injections of serum from a hay-fever patient followed by intravenous injection of the appropriate pollen resulted in a huge urticarial reaction. Dr. Gloyne repeated this experiment for me on the guinea-pig and rabbit, but it gave a negative result. Serum from an asthmatic extremely sensitive to horse-hair was injected intradermally into a rabbit; within half an hour horse-hair protein was injected intravenously; no reaction occurred. The serum and the horse-hair protein were then injected simultaneously intradermally into a guinea-pig; again there was no reaction. We have, therefore, to rely on patients with a known idiosyncrasy. From many tests the following facts have emerged.

The powdered proteins if kept dry appear to remain active indefinitely. Powdered proteins suspended in ½ per cent. carbolic acid in water or normal saline will remain active for at least three or four years.

1. In the spring of 1921 a little girl, K. W., who was extremely sensitive to egg, was tested with a 1 in 100 solution of egg-white with ½ per cent. carbolic acid. A marked reaction was obtained. In March, 1925, this same solution was used on another egg-sensitive individual (C. L. P.); a very marked reaction was obtained. This had remained active for four years.

2. A solution of oat protein produced a marked reaction on W. A. in 1921; in 1923 another test was made with this same solution and a very marked reaction resulted.

Effect of Heat.—As shown above, with egg-white, boiling does not appear to destroy the activity of some of the test substances. As another example: The filtrate from macerated herring can be boiled and filtered, and the filtrate boiled again and filtered and still remain powerfully active, and thus one can obtain a perfectly clear fluid for testing or injection. R. P. Wodehouse[1] writes that J. L. Goodale showed that "as a general rule vegetable foods, boiled or moderately cooked in any way, furnished just as powerful anaphylactogens as the corresponding raw foods, thus eliminating, in these, all heat coagulable proteins as possible anaphylactogenic factors. In the case of the fruits, however, this is not so, for the weight of evidence seems to show that heating destroys their anaphylactogenic properties." This last statement I have not been able to test.

Significance of the Reaction.

A well-marked dermal reaction, if the controls are negative, usually denotes a sensitiveness to the substance employed, but it does not invariably follow that the subject has any pathological reaction to it in the ordinary course of life. One patient, for example, gives a well-marked reaction to rice protein, and has severe asthma. He can, however, eat rice without any apparent discomfort, and withholding rice produced no amelioration of his asthma, and no immunity from his attacks was given by subcutaneous injections of rice protein. In other cases, however, there is, without a doubt, a close and direct ætiological relationship. For example:—

While testing K. W., a little girl who is egg-sensitive, with egg albumin, the dermal reaction was intense, and the small amount of egg albumin absorbed produced asthma and vomiting and bloodshot eyes.

W. A. was extremely sensitive to oat protein, less so to middlings. I commenced by giving injections of middlings protein. One day a change was made to oat protein. In error my clinical assistant gave a larger dose than was intended and 4 minims of a 1 in 400 solution were given; the man was free from asthma at the time. In a few moments his eyes began to run profusely, then paroxysms of sneezing seized him, and in a few minutes his chest was in the throes of an asthmatic attack. Neurosis could not have played a part, for the patient was unaware of any change in the injection.

C. L. P., an egg-sensitive man, has very kindly allowed me to make a great number of experimental tests on his arm. Although large dermal reactions had been obtained many times no general reaction occurred. One day, however, I was testing with proteins obtained from birds' egg other than the hen and reptilian eggs. A very intense reaction was set up by duck's egg and I failed to wipe off the protein sufficiently soon. Nausea and asthma occurred.

W. B., a severe asthmatic, was extremely sensitive to horse-hair and to the pollens of *Holcus lanatus* (Yorkshire fog grass) and rye grass. He begged for heroic treatment. A comparatively big dose of horse-hair protein was therefore infected; within half an hour he had severe asthma, and within an hour he had urticarial lumps all over the body and in the angle of the left eye.

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[1] Boston Med. and Surg. Jour., August, 1916, Preparation of Vegetable Food Proteins for Anaphylactic Tests.

Application of a Discovered Idiosyncrasy.

This is not so simple as might appear from the literature. I have made hundreds of tests on scores of patients and cannot yet be enthusiastic about the practical outcome of it all, although I am convinced that the subject is worth pursuing. I have attempted to desensitise several patients, and though some of them have declared themselves improved, I have not succeeded in abolishing the dermal reaction. I have given injections of the following proteins: oats, fish, rice, cat's hair, horse-hair, and egg.

W. B. had a four months' course of injections of horse-hair protein and the pollen of *Holcus lanatus* and rye grass; at the end of four months his dermal reactions were still very marked (by this I mean a wheal the size of a florin and a red zone 8 cm. × 5 cm.), though he expressed himself as "a thousand times better."

These experiences are not in accord with those published by some other writers, who say that the dermal reaction progressively lessens with the progress of the treatment. Again, many patients with a known idiosyncrasy are absolutely compelled to avoid, and do avoid, the offending substance, and yet they have asthma. It is true there may be other things to which they are sensitive, but one is forced to the conclusion that we are far from the solution of the riddle, and one cannot fail to view very critically many of the glowing therapeutic results that have been published, and to wonder what the subsequent history of these patients will show. Asthma patients are extraordinarily susceptible to suggestion, and it is very hard to eliminate this factor, although I have tried to do so as far as possible in my cases. Some patients have been greatly benefited by the dermal tests which they imagined to be injections.

In any large series of cases treatment, on old traditional lines, with a mixture of potassium iodide, arsenic, lobelia, and stramonium, will yield a considerable percentage of satisfactory results, as also will treatment by vaccines. Moreover, asthma is so suspiciously like a neurosis in many ways that one has to be exceedingly careful before publishing results, and employing the famous *post hoc ergo propter hoc* argument that has done more than anything else perhaps to hinder the progress of medical science. There is no doubt that all the elaborate ritual of the skin tests greatly impresses the patient, and some of the substances used are so ludicrous that orthodox medicine appears to be left far behind and fascinating and mysterious vistas to be opening. The therapeutic effect of this cannot be ignored.

There is much work to be done. Every general practitioner can help. If he will keep his eyes open for cases of idiosyncrasy of all kinds he will find them. If he has a clue it is easy to make preliminary investigation with the crude article as mentioned above. Having obtained a reaction, it is then worth while having the pure protein made up by a good firm of chemists who are interested in this work, in different dilutions in carbol saline, say 1 in 100, 1 in 1000, 1 in 10,000, 1 in 50,000, and 1 in 100,000, and see which dilution fails to give a reaction. This having been determined, a strength intermediate between this and the next dilution should be used for injections, beginning with 0·1 c.cm. and working up to 1 c.cm., the rapidity depending on the reaction. After this the next strength is taken and so on. The results, whether positive or negative, should be published. Thus there will become available further materials for the study of idiosyncrasy and desensitisation.

Efficacy of Certain Commercial Proteins.

Whenever possible I have tested certain commercial test proteins on patients with a proved idiosyncrasy. Some I have found efficient, others inert. I am inclined to think that one firm loses a good deal of the protein in the filtering process employed. The preparations in fluid form are much more convenient to use than those in a boro-glyceride base. For group tests the solutions must be of sufficient strength.

So far as I know, only one firm employs the method of precipitating the pure protein by alcohol or acetone and immediately redissolving this, determining the strength of the solution obtained by an estimation of the nitrogen content. These test solutions, when put up as single tests, I have found active and productive of marked reactions. The multiple tests, however, I have not found uniformly satisfactory, probably because the concentration is not sufficiently strong in all cases.

Conclusions.

1. Group testing is efficient if the solutions employed are not too weak. 2. Proteins, it appears, will keep active in solution with ¼ per cent. or ½ per cent. carbolic for at least two years, and this is a convenient method of keeping test group solutions. 3. The best method of preparing proteins depends upon the use to be made of them. As a general rule it may be said that the powder form is the most satisfactory. Often, however, the powders become very insoluble, in which case precipitation and immediate re-solution is the best method. 4. It appears that many of the substances used can be boiled without altering their activity. 5. The existence of a dermal reaction, even a well-marked one, must not be taken as proof positive of an ætiological relationship between the substance producing this reaction and the symptoms of the patient, though it must not be ignored without consideration. 6. It is too early to dogmatise about the therapeutic application of the discovery of an idiosyncrasy. 7. To sit down to a case of some obscure malady with a miscellany of test proteins is not likely to yield any very useful result, but to investigate any case of strongly suspected idiosyncrasy, particularly from the point of view of desensitisation, and to publish it, will yield valuable material for the study of idiosyncrasy and its treatment.

I would express my great indebtedness to Dr. S. R. Gloyne, pathologist to the City of London Hospital for Diseases of the Heart and Lungs, for invaluable help; to Mr. Smart, Chief Laboratory Assistant, and to Mr. Laval Charles Proudfoot, who has most kindly, from motives of pure scientific interest, allowed me to perform a large number of experimental tests upon him.

CANCER OF THE BREAST.

AN ATTEMPT TO ESTIMATE THE DURATION OF LIFE AFTER OPERATION.

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AT the request of the Medical Committee of the Cancer Hospital I have endeavoured to trace all the patients operated on in the hospital during the years 1905–1914 inclusive; to determine the length of life after the operation; and, when the patient has deceased, the cause of death. In pursuit of this information 560 inquiries were sent out and 279 answers were received. Unfortunately, 11 of the answers contained only the bare statement that the patient is dead and I have failed to discover anything further concerning these. In 50 per cent., therefore, the case was traced directly. By the kindness and assistance of the Registrar-General search was then made through the registers of deaths for the remaining 281, with the result that the date and cause of death were ascertained in another 197, but the names of 84 could not be found in the registers. Of the latter nothing can be discovered. Some (possibly, or even probably, a considerable proportion) are still alive. The failure to trace any particular person may be due to the fact that she is still alive; that she has changed her name, either by marriage or otherwise; that she has left the country and resides or has died abroad; that, being still alive, she has changed her address and left at her old residence no information by which it is possible to find her. Thus, of the 560 cases operated on in ten years the fate of 476 (85 per cent.) is known, though for 11 of these neither the date nor cause of death can be stated. So, then, 431 (77 per cent.) are known to be dead, 45 (8 per cent.) were alive at the time of inquiry (June, 1924)—i.e., they were alive ten years or more after the operation. Of those deceased 36 (6 per cent.) had survived ten or more years after operation, making a total of 81 (14 per cent.). Eighty-four cases remain, of whom nothing is known subsequent to their discharge from hospital.

How this lacuna in my information affects the final analysis is, of course, quite impossible to determine. It is possible that some are still alive. In any case the figures above, so far as they deal with survivals and the number who lived ten years or more after operation, are minimal, and were all the cases traced, could not suffer any diminution, but might, just possibly, be increased. These figures are perhaps more easily appreciated from Table I.

TABLE I.

Total number of patients.	Traced.							Total untraced.
	Total.	Living at date of inquiry.	Lived 10 or more years after operation.	Dead at time of inquiry.				
				Died of cancer.	Died of dis. other than cancer.	Cause of death unknown.	Total.	
560	476 (85 %)	45 (8 %)	81 (14 %)	379 (68 %)	41 (7 %)	11 (2 %)	431 (77 %)	84 (15 %)

Certified Causes of Death and Date After Operation.

Death was certified due to causes other than cancer in 47 cases, but in 6 of these—viz., phthisis 2, pleurisy and bronchitis 3, and pleurisy with effusion 1—there is a strong suspicion that the fatal lesion was in reality a secondary growth. It seems certain, however, that 41 (7 per cent.) of the deaths were not due to recurrence or metastasis. The causes certified were as shown in Table II.

TABLE II.

A. = Age at death. B. = Months after operation.

Disease.	A.	B.	Disease.	A.	B.
Cerebral hæmorrhage (10).	55	6	Accident (2) ..	43	18
	62	19		80	59
	64	14	Uræmia (2) ..	70	90
	64	156		73	120
	68	72	Gangrenous appendix ..	47	3
	69	84	Pneumonia:		
	70	66	Lobar	56	16
	72	126	Broncho ..	76	128
	74	36	Chronic rheumatism ..	69	33
	76	96	Pulmonary hæmorrhage	71	10*
Valvular disease of the heart (6).	58	104	Cirrhosis of liver	64	32
	68	20	Carcinoma of ovary	60	164
	69	24	Anæmia	44	12†
	69	34	Sarcoma of brain	47	14‡
	71	40	Diabetes ..	59	19
	73	56	Myxœdema ..	46	9‡
Acute bronchitis (4).	63	33	Insane	58	24
	64	58	Not known (2).	73	192
	69	74		79	84
	74	46			
Senile decay (3).	64	180			
	65	17			
	75	9			

* An inquest was held and post-mortem examination made, but no cause for the hæmorrhage was found.
† Died in the Royal Northern Hospital, London.
‡ Died in one of the London Infirmaries.

Classification of Cancerous Growths.

In order to determine how the stage of the disease at the time of operation influences the subsequent history of the patient it is necessary to devise some classification of cancerous growths. None with which I am familiar is entirely satisfactory, and I therefore made a very crude division of them into five groups. (1) A small nodule less than a walnut in size and without cutaneous involvement, or at most slight dimpling on picking up the skin. No clinical (glandular) metastasis. (2) A nodule larger than a walnut in size, with definite skin involvement, but no palpable glandular enlargement. (3) A small nodule as (1), but with palpable axillary glands secondary to it. (4) A large nodule as (2), but with metastases in the glands of axilla or neck. (5) A large ulcerating tumour with glandular extension.

The fallacies of this grouping are very obvious, but not more so than those of any other classification so far devised. In the first place, the size is no criterion whether the tumour is early or late from a pathological point of view. In the second place, axillary glands may be infected, but not palpable; in many cases the fact was noted that the patient was so stout that no useful palpation of the axilla was possible. It seems, however, justifiable to assume that, as a rule, a case without demonstrable glandular infection is in a pathologically earlier stage of development than one in which such infection can be clinically determined.

Type of Operation.

Many of the cases which form the basis of the following statistics underwent more than one operation. In one case after one breast was removed the second was found infected, and that, too, was later removed. In a few local recurrence made its appearance and a second or even third operation was performed to remove it. In all such cases the period of survival is measured from the date of the first operation until death.

To enter into details of the operation performed is no part of my present purpose. The series contains cases operated upon by many different surgeons, and probably no two of them adopted exactly the same technique. In practically every case, however, an attempt was made at radical excision. In one case a local excision of the mass was effected as a preliminary measure, the diagnosis being in doubt. Although microscopical examination proved the mass malignant, the patient refused further surgical treatment and was alive and well in June, 1924. Apart from an isolated case of this kind the scope of operation was always extensive, but its exact boundaries varied considerably. In nearly half the whole breast was removed with a wide area of skin and the sternal portion of the pectoralis major with its fascia. Sometimes the pectoralis minor was removed. A certain amount of the axillary fascia was dissected out, but no attempt made to clear the space or clear the vessels. In the remainder the axillary dissection was complete. In many the incision was carried down into the anterior abdominal wall and part of the muscular fascia removed. So far as I can determine, the supraclavicular glands were not in any case excised, but it is often impossible to discover from the notes precisely what was done in any particular case, so that no estimate can be made of the length of life after the various types of operation.

The following tables give an analysis of 465 cases—i.e., all the cases traced with the exception of 11, the date of whose death I failed to discover.

TABLE III.—*The Survival Rate.*

73	cases in Group	1:	still alive	19 (26 %)
58	" " "	2:	" "	6 (10 %)
162	" " "	3:	" "	10 (6 %)
132	" " "	4:	" "	8 (6 %)
40	" " "	5:	" "	2 (5 %)
465	"		" "	45 (9 %)

It is important to know what is the probability that the diagnosis of these cases is correct. In 38 of the 45 the malignant nature of the growth was confirmed microscopically (all were carcinoma); in two cases the pathologist reported the histological appearance as "suspicious"; while in the remainder (five cases) no record of pathological examination can be found. Further, of all the cases which survived ten or more years after operation histological examination proved the lesion to be malignant in 61, but in 20 no record is available.

TABLE IV.—*Duration of Life After Operation.*

Including those cases still living, it is found that :—

54 cases in Group 1 } survived an average of { 5·6 years.
52 " " " 2 3·5 "
152 " " " 3 4·3 "
124 " " " 4 2·3 "
38 " " " 5 2·6 "

It appears, therefore, that, amongst other factors probably, the presence or absence of glandular involvement is of the utmost importance and its absence (even if clinical only) very materially improves the outlook. These figures are represented graphically in the diagrams (Figs. 1 to 6). The graphs represent the period of survival after operation.

FIG. 1.

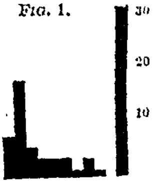


FIG. 2.

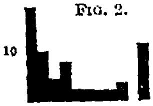


FIG. 3.

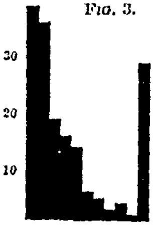


FIG. 5.

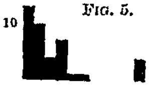


FIG. 4.

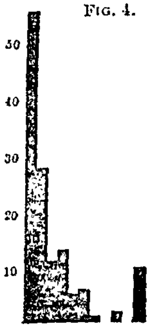
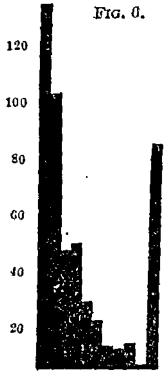


FIG. 6.



Graphs representing the period of survival after operation. In each figure the first column shows the number of persons who survived for one year or less, the second those who survived for more than one year and less than two, and so on to the eleventh column, which shows the number who survived more than ten years.

Fig. 1. All cases in Group 1 (Table IV.)
" 2. " " " 2 "
" 3. " " " 3 "
" 4. " " " 4 "
" 5. " " " 5 "
" 6. The total cases. This figure is on half the scale of the other figures.

TABLE V.—ANALYSIS BY AGE GROUPS OF THE TOTAL CASES TRACED.

A. = Number of cases. B. = Average number of years survived.

Group No. ..	1.				2.				3.				4.				5.				Totals.	
	Alive.		Dead.		Alive.		Dead.		Alive.		Dead.		Alive.		Dead.		Alive.		Dead.			
Age Group.	A.	B.	A.	B.	A.	B.	A.	B.	A.	B.	A.	B.	A.	B.	A.	B.	A.	B.	A.	B.	A.	B.
25–29 ..	—	—	—	—	—	—	—	—	—	—	4	7·3	—	—	1	2·6	—	—	—	—	5	6·3
30–34 ..	—	—	3	2·5	—	—	1	9·0	—	—	7	5·5	—	—	1	2·0	—	—	—	—	12	4·7
35–39 ..	2	11·0	1	7·5	1	13·0	3	1·9	1	12·0	10	2·9	1	19·0	13	2·1	—	—	2	6·0	34	4·0
40–44 ..	4	14·0	6	4·4	—	—	10	2·2	2	14·0	26	5·0	2	11·5	12	1·8	1	13·0	3	3·8	66	5·0
45–49 ..	6	15·1	11	5·0	1	15·0	4	8·5	3	15·7	26	4·7	1	14·0	20	1·8	1	14·0	9	5·3	82	5·8
50–54 ..	1	14·0	4	6·6	—	—	8	5·7	2	15·5	28	4·1	1	16·0	26	2·3	—	—	5	1·9	75	4·2
55–59 ..	3	14·3	12	9·1	1	10·0	9	2·7	2	11·0	20	3·9	2	16·5	19	2·0	—	—	7	1·5	75	4·9
60–64 ..	1	15·0	10	5·3	—	—	7	2·8	—	—	17	3·7	1	13·0	17	3·4	—	—	6	2·3	59	4·0
65–69 ..	1	11·0	5	4·9	1	10·0	8	2·6	—	—	12	4·0	—	—	9	2·6	—	—	5	1·2	41	3·4
70–74 ..	1	16·0	2	5·9	2	13·5	2	5·9	—	—	2	2·3	—	—	6	2·6	—	—	1	2·0	16	5·5
Totals ..	19	14·1	54	5·6	6	12·5	52	3·5	10	14·0	152	4·3	8	15·0	124	2·3	2	13·5	38	2·6	465	4·6

The next point is the influence of the patient's age upon the result of surgical treatment. Is the disease more malignant and less amenable to operation in a young person than in an elderly or old? Reference to Table V. shows that in each of the five groups the period of survival does not materially vary with the age of the patient, and taking all the groups together the same result is obtained. From these figures there is no evidence whatever that the age of the patient affects the prognosis or that cancer tends to be more malignant in the earlier decades of life than in the later.

Conclusions.

1. That if cancer is primarily a local disease and it may therefore be said that when local it is early, whatever the size or exact histological nature of the tumour, while it is late as soon as it reaches the lymphatic glands; then the earlier the disease at the time of operation the greater the possibility of completely eradicating it. The very earliest glandular infection enormously reduces the chances of cure.

2. The actual average duration of life after operation shown in Table V. is 4·6 years, but since some (9 per cent.) of the patients are still alive, and others (9 per cent. again) died of diseases other than cancer it is certain that the true average, qua cancer, is more than this, and probably approximates to five years.

3. The average duration of life *after operation* is greater by two years than that of unoperated cases

from onset to death. (The normal duration of unoperated cases averages three years.[1])

4. The age of the patient does not influence, one way or the other, the prognosis as regards ultimate survival after operation.

Clinical and Laboratory Notes.

A CASE OF RECURRENT PNEUMOTHORAX.

By L. T. Burra, M.D. Oxf.,

TUBERCULOSIS OFFICER, BUCKS COUNTY COUNCIL.

The following case is of interest as one in which there was recovery from pneumothorax, with a liquid effusion, and a recurrence of the condition about five years later with fatal issue :—

C. B., aged 31, enlisted in 1908, and was discharged from the army suffering from pulmonary tuberculosis in February, 1919.

History.—He first came under my notice in September, 1921, when he gave the following history. In November, 1918, while interned in Holland, he complained of pain in the right side of the chest and shortness of breath. Soon afterwards he was sent home, and pulmonary tuberculosis being diagnosed he was sent to the Brompton Hospital and afterwards to the Sanatorium at Frimley.

Condition on Examination.—When I examined him in September, 1921, he was in good general condition and the physical signs suggested quiescent disease of the upper part of the upper and lower lobes of the right lung with thickened pleura at the base—there was nothing suggesting pneumothorax; the left lung was free from abnormal signs. He came to one of the dispensaries at intervals, and showed a steady improvement in general health and in the condition of the lung, the symptoms and signs becoming less marked till Oct. 6th, 1923, when I was sent for urgently to see him at home. He was in bed complaining of pain in the right side of the chest for the past four days, with shortness of breath. He was lying down and was not in obvious distress—pulse 112, temperature 102·4° F. On examination I found typical signs of pneumothorax with a liquid effusion at the base. I explained the condition to him and he then said he had the same thing when first ill in November, 1918.

A few days later he was coughing up offensive purulent sputum, and two pints of offensive pus were withdrawn from the right pleura. This pus was swarming with T.B. He coughed up pus whenever the fluid reached the level of the sixth rib, and as he was losing ground and developed broncho-pneumonia of the left lower lobe, he was admitted to St. Bartholomew's Hospital. No operation for draining the pleura was undertaken owing to the condition of the left lung, but a considerable quantity of pus was drawn off by aspiration on one or two occasions; this pus did not show T.B. on examination.

He went down hill rapidly, and died about six weeks after the onset of the acute illness in October.

Post-mortem Examination.—At autopsy a complete pneumothorax was found on the right side with a perforation in the lower part of the upper lobe, and on the left side a recent widespread tuberculous broncho-pneumonia, presumably due to inhalation of pus from the right pleura.

In order to confirm the history of a previous pneumothorax, I wrote to Dr. J. F. Alexander, under whose care he had been in 1919; and in answer he wrote : "I remember C. B. well . . . . He had very definite signs of pneumothorax when I first saw him, coin sound, tinkling, and succussion splash. There was a lot of fluid at first, but this was gradually absorbed and before he left here there were no definite signs of pneumothorax . . . . There is no doubt about the previous pneumothorax."

I have only seen two papers referring to recurrent pneumothorax, both in the *Boston Medical Journal,*[2] but in the cases there recorded the condition seems to have been localised. Dr. Hyman Morrison, in his paper, quotes papers by Hamman (1916) referring to 16 cases, and by Marshall and Craighead (1918) referring to 13 cases; so that the condition apparently is not very uncommon.

I am indebted to Dr. Morley Fletcher, under whose care at St. Bartholomew's Hospital the patient was, for his permission to publish this note and for information as to the findings post mortem; and to Dr. Alexander for his description of the condition of his patient in 1919.

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[1] [illegible]-Barlow and Leeming: Brit. Med. Jour., 1924, ii., [illegible]; Wyard: Ibid., 1925, i., 200.

[2] Hyman Morrison: Boston Med. and Surg. Jour., 1921, [illegible]; John B. Hawes: Ibid., 1922, clxxxvi., 528.

A NOTE ON THE TREATMENT OF PSORIASIS.

By Edward C. B. Ibotson, M.D. Lond.

Psoriasis remains a conundrum as to its ætiology, occurring as it does at all ages and often in people in apparently robust health. Viewed in the light of the cutaneous disturbances that occur in myxœdema and the improvement frequently produced by thyroid extracts, one cannot but feel that endocrine disturbance plays a great part in it. When in association with rheumatoid arthritis one feels that it is a case then of combined toxis and defective internal secretion. That it sometimes terminates in cancer cannot be wondered at when one considers that the old stock treatment consisted in prolonged and increasing administration of arsenic. The following case illustrates the success sometimes rapidly attained by the use of thyroid extract internally combined with the external use of tar :—

Case 1.—A recently married woman, aged 52, in apparently robust health, had had bad psoriasis for seven years, commencing at the age of 47. Her periods ceased only three years ago, so there was no connexion between their cessation and the onset of psoriasis. Her father, who died at the age of 85, had suffered from eczema but not from gout; one of his brothers had also suffered from eczema; paternal aunt died aged 85; uncle died aged 80; grandmother, mother's side, died aged 92; mother living, aged 72, never had any skin lesion but suffered from rheumatism; one sister living, one died at 15 of phthisis.

The patient, whom I first saw on August 28th, was tall, well-built, with healthy complexion, had never had any acute illness save the infantile complaints, measles and varicella, and had never been constipated. All vital organs working well; urine normal. She was much distressed by inveterate psoriasis, for which she had been previously treated by other medical men. Internally she had taken arsenic for long periods in increasing doses; also salicin and salicylate of soda. Externally she had had chrysarobin, salicylic acid, white precipitate, resorcin, and collodion. Nothing had done any good. Thyroid had not been tried.

Treatment.—I recommended her to reduce her diet to the minimum of meat and to live as much as possible on fish, fruit, vegetables, eggs, and milk. This was in view of thyroid treatment, which is considered to act more beneficially when little or no meat is taken. I put her on thyroid extract gr. i. (Burroughs and Wellcome) three times a day to be taken for three weeks; this was stopped for a week and then again resumed. I advised free purgation with Carlsbad salt. Externally she was to wash all the patches with warm water and soft soap twice a day to remove scales and then apply Hutchinson's paint, which consists of equal parts of liq. carbonis detergens, spirit vini rect., and liq. plumbi. subacet. B.P. She was also to wash the patches occasionally with ichthyol soap.

On August 28th there were large patches on the left elbow, front and back of both thighs, both knees, and front of both legs, on the lumbar spinal region, one on each hip, and one under the right ribs. There was also psoriasis of the nails of both hands. By Sept. 30th, under this treatment, all the patches had disappeared. The nails are still thin and are being treated with unguent. hydrargyri oxid. flav. The thyroid has been taken without any ill-effects, the pulse remaining absolutely normal.

Oct. 15th, 1921: The patient has continued on vegetarian diet and 3 gr. daily of thyroid extract. The skin remains absolutely clear and the diseased nails are beginning to be replaced by healthy ones. For them she has used ung. stanni. oleatis, ʒi to ℥i, as recommended by Dr. R. W. MacKenna,[1] of Liverpool.

April 8th, 1925: The patient remains free from patches, but she has had some red spots on the skin which disappeared after the application of scarlet red ointment. She also complains of dryness of the hair. This has ceased under pilocarpine and lanoline inunction.

May 20th: She remains quite free from psoriasis.

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[1] MacKenna: Diseases of the Skin. Baillière.

I had another curious case illustrating the association of psoriasis and rheumatic fever.

CASE 2.—M. J., male, aged 35, came to me with psoriasis on Jan. 13th, 1921. Five days later he developed rheumatic fever and had a long illness. He came again to me on Dec. 1st, 1921, with psoriasis. I gave him an arsenical mixture, and on Dec. 3rd I was sent for to see him with rheumatic fever (temperature 102° F.).

April 8th, 1925: His temperature has long been normal, but he has pain in the shoulders. The psoriasis has not recurred.

The impression left on my mind is that if psoriasis be not an endocrine deficiency disease it is hard to explain in any other light.[1] I would be glad to hear the experience of others as to success with thyroid in psoriasis and as to recurrences.

Merioneth, N. Wales.

Medical Societies.

ST. MARY'S HOSPITAL INSTITUTE OF PATHOLOGY AND RESEARCH.

FILTERABLE VIRUSES.

THE fifth of a course of lectures on Pathological Research in its Relation to Medicine was delivered at St. Mary's Hospital Institute of Pathology and Research on May 28th, when Dr. W. E. GYE dealt with the filterable viruses. In his opening remarks the lecturer dealt with the history of these substances, remarking that some 40 or 50 diseases of animals were now ascribed to their activity with a fair measure of certainty. Among the human diseases included in the list were small-pox, chicken-pox, measles, and encephalitis lethargica. Of the large list of animal diseases, which included distemper, foot-and-mouth disease, rinderpest, and swine fever, he regarded pleuro-pneumonia of cattle and chicken plague as the only two in which the claim for the filtrable virus had been really substantiated. He described the difficulties with which the bacteriologist has to deal when attempting to investigate these organisms, owing to their minute size, about 0·15 of a micron, their hazy outline, and the impossibility of seeing them with ordinary microscopes. One theory put forward as to their nature was that they were liquids and living things at that; this was based on their ability to penetrate to the deeper layers of an agar plate. In the lecturer's opinion however, all the evidence pointed to their being living particulate organisms with nothing very mysterious about them; it was only their small size and the difficulty in their cultivation which stood in the way of their proper classification. Dr. Gye's own work in this matter had been concerned with the first of the three transmissible tumours described by Peyton Rous of the Rockefeller Institute in New York in 1911. This was a very loosely arranged spindle-celled sarcoma of the chicken possessing certain properties distinctive from all other similar tumours in that it was transmissible by a filtrate. It was also extremely specific, the experimental animals requiring at first to be related by blood to that in which the tumour originated. It was found that if this tumour were ground up, filtered through layers of sand and paper pulp, and passed through a candle, the resulting filtrate was capable of reproducing an identical tumour on injection into another bird. Dr. Gye, experimenting with this tumour, found that 1 c.cm. of the filtrate, which is singularly free, to all appearance, of any particulate matter, would produce a small, hard point under the skin at the side of inoculation in seven days, while in three weeks the bird had usually died with widely distributed metastases. Curiously, these secondary growths frequently occurred in the heart muscle. If one-quarter of a c.cm. of the filtrate were used with three-quarters of a c.cm. of Ringer solution to make up the total quantity, the resulting tumour appeared much later, if at all, so that the size of the tumour, within certain limits, was proportional to the amount of filtrate injected. He pointed out the objections to the use of the term "filterable virus," based on the fact that the filtrability of a substance depended on many conditions, such as the pressure, the time, and the presence of mucin and nucleo-proteins.

The next experiment was performed to determine whether or not there were anything particulate in this filtrate. It was centrifugalised at the rate of 9000 revolutions for two hours. It was then found that the inoculation of 1 c.cm. of the upper portion produced tumour growth after a slightly longer interval than did the inoculation of the lower portion from the centrifugalised tube. There thus appeared to be some evidence in favour of the presence of a particulate substance. If the supernatant fluid of a growth of the virus in sugar were treated in the same way there was very definite evidence to this effect, as the upper portion of the fluid then produced no tumour or only a very small one after a considerable interval, by which time the tumour produced by the inoculation of fluid from the bottom of the tube had attained a considerable size. The objection to be raised to this result was the possibility of masses of colloidal material being spun to the bottom of the tube and dragging the virus with them. In a further experiment some of the tumour filtrate had its pH reduced to 4·5 with acid phosphate, with similar results on centrifugalising. It thus appeared that there was sufficient evidence to justify the conclusion that the virus was particulate. If portions of the tumour were centrifugalised in Ringer solution a small amount of fluffy material would appear in the bottom of the tube. The supernatant fluid was carefully pipetted off this and it was then washed with two centrifugalisations with Ringer. The final deposit, when diluted with 1 c.cm. of Ringer, produced no tumour when inoculated into a chicken.

The dominant characteristic of the three tumours investigated by Rous was their peculiar specificity. The final experiments described by Dr. Gye were undertaken in an attempt to show that the specificity could not depend on the virus itself; it must be accompanied by something else which determined the specificity of the infection. If the filtrate were carefully mixed with chloroform and heated at 37° C. for three or four hours and the chloroform then removed by a pump, the inoculation of 5 c.cm. of the resulting filtrate produced no tumour, although less than 1 c.cm. of the original would have killed the bird. If pieces of tumour were dropped into culture medium and incubated for three days aerobically the culture fluid did not produce tumour formation. If, on the other hand, the benign fluids resulting from the two last experiments were mixed and inoculated a tumour resulted. Thus there appeared to be two elements in the filterable virus of this condition, a non-particulate portion and a particulate, living portion, invisible with ordinary microscopes. The proof that this was a virus depended on its cultivation, and this had been successfully done.

EDINBURGH MEDICO-CHIRURGICAL SOCIETY.

A CLINICAL meeting of this Society was held in the Royal Infirmary on May 13th, Sir DAVID WALLACE, the President, in the chair.

Exhibition of Cases.

Three cases were shown for Dr. CHALMERS WATSON. The first was of a man suffering from disseminated sclerosis; an X-ray examination demonstrated ileocolic stasis, and he had marked bacilluria. During treatment he developed acute appendicular symptoms with a recurrence of the symptoms of disseminated sclerosis, which had abated under intestinal treatment.

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[1] Evolutionists might consider psoriasis a reversion to the fish or lizard type.

The second case was a man with an old specific history, who had been treated for sclerosis of the cord 11 years ago. A year ago he had an acute attack of nephritis, and while in bed his legs became gradually drawn up; there were marked ileal stasis and bacilluria. A third case of disseminated sclerosis had advanced oral sepsis. It was suggested that a toxin might be a cause of the sclerosis, and treatment was by an autogenous vaccine.

Mr. J. W. **STRUTHERS** showed a woman, aged 49, in whom a tumour had been removed from the jaw in 1916, who had returned with a swelling in front of the left tibia. On examination further tumours were found on both femurs. The tibial tumour, a myeloma, was removed easily; the surface growth was large, but it had a comparatively small extent in the medullary cavity. It was remarked that these so-called giant-celled *tumours are often a feature of osteitis fibrosa* and that they were probably local manifestations of the disease. Another case was shown which had been operated on a long time previously for a fatty tumour of the thigh; more recently four further operations had been carried out on the tumour as it recurred, finally as a fibroid sarcoma; this was interesting, said Mr. Struthers, as a fatty tumour is the only tumour which is supposed never to undergo malignant transformation.

Prof. D. P. D. **WILKIE** showed a man, aged 44, suffering from an arteriovenous aneurysm, caused presumably by a fragment from a bursting rifle grenade. After being a prisoner of war he went to Switzerland, where a swelling in his neck was noticed together with a bruit. He was discharged from the army. When now examined, he had obvious pulsatile swelling in the left side of the neck and prominence of the eye on that side with marked bruit over the swelling. On operation the vessels involved were found to be the common carotid artery and the jugular vein, the communication being of no great size, stout catgut was tied round the communication, leaving a lumen to both artery and vein. Immediately after tying the suture all buzzing ceased, and since then the eye had receded and symptoms had disappeared.

Mr. **HENRY WADE** presented a case of a pensioner suffering from tuberculous disease, involving the first and second lumbar vertebræ with a large psoas abscess on the right side; *after due consideration* it was decided to perform Albee's operation for fixation of the spine. A graft of about 10 inches was taken from the tibia and implanted from the tenth dorsal to the fourth lumbar spines; a plaster jacket was put on and left for three months, during which the psoas abscess was treated by aspiration. The patient now, after six months, was comfortable and walking about, whereas under more conservative treatment he would have had to spend two years in bed.

Mr. W. **STUART** showed a case of Dupuytren's contracture, where marked improvement had followed 11 injections of fibrolysin; the fingers were for all practical purposes fully extended. In his experience injections of fibrolysin gave better results than any other method; in a certain percentage of cases marked improvement resulted, but the method was uncertain. The injections must be into the palm, when given into deltoid or buttock he had had no success.

Mr. **GEORGE CHIENE** showed a case of carcinoma of the appendix in a man of 26; the disease was not deep-seated and it was a question whether a further operation should be done. A similar case in a woman operated on ten years ago had given no further trouble.

Mr. **JAMES GRAHAM** showed a case of an elderly man who seven years ago had suffered for two years from hæmaturia without symptoms other than anæmia; cystoscopy showed the blood to come from the left ureter, the right functioning normally; fearing the presence of a tumour the left kidney was removed. Lately a similar hæmaturia arose from the remaining kidney; this was examined and found to be affected by chronic interstitial nephritis, distinct but not marked with a thickened capsule. Decapsulation was performed, shortly after which the hæmaturia disappeared. The case was interesting, as it emphasised the fact that interstitial nephritis might be associated with profuse hæmaturia without other symptoms and that an apparently normal kidney with hæmaturia may be associated with pathological changes.

Dr. **DOUGLAS GUTHRIE** demonstrated a patient with early malignant disease of the vocal cord, which had been removed by laryngo-fissure. Local and general anæsthetics were used, the skin was injected with novocaine tinged with stain, tracheotomy was performed, and the larynx anæsthetised. The cough reflex was abolished and the growth removed with ease. A speedy recovery followed, and at the time of demonstration, ten weeks after, the patient had a good voice produced by fibrous tissue in place of the excised cord.

Mr. W. A. **COCHRANE** showed a case of a man aged 24 who was admitted to hospital as an "acute abdomen." On exploration two huge tumours of the size of oranges were found in the pelvis, which proved to be two separate foci of tuberculosis of the small intestine; a resection was performed and the patient made a good recovery. The tumours were of a hyperplastic nature rarely found in the small intestine.

Dr. **JOHN D. COMRIE** showed three cases illustrative of mental disturbances in neural syphilis. All showed strongly positive Wassermann reactions, and all improved under N.A.B., sulpharsenol or neo-silver-salvarsan, respectively.

Mr. W. **QUARRY WOOD** showed two cases in which bone cavities had been filled with muscle grafts. The first was in the case of a youth aged 19 with relapsing osteomyelitis of the tibia; the bone cavity was purified and filled by a muscle flap. The second case was of a similar condition in a man of 25, who had suffered for 14 years from osteomyelitis of the humerus. This was treated in the same way. In both cases excellent results had been obtained.

THE remarks attributed to Dr. G. W. Mitchell in the discussion on High Voltage and Radio-therapy, held at the Royal Society of Medicine (May 30th, p. 1131), were made by Dr. William Mitchell, of Bradford.

PROCEEDINGS OF THE ROYAL COMMISSION ON NATIONAL HEALTH INSURANCE.*

(Continued from p. 1136.)

EVIDENCE OF THE BRITISH MEDICAL ASSOCIATION.

THE statement of evidence now printed as Appendix XLVII. has already been summarised in our issue of May 9th, p. 993.

It was supported in oral examination by Dr. R. A. Bolam, Chairman of the Council; Dr. H. B. Brackenbury, Chairman of the Representative Body; Dr. H. Guy Dain, Chairman of the Insurance Acts Committee of the Association, and Dr. A. Cox, Medical Secretary. Supplementary evidence was given on certain points by Dr. H. J. Cardale, Chairman of the London Panel Committee; Mr. N. Bishop Harman,

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* In previous articles the proceedings of the Commission were reported under the following headings: Introductory Note; The Scope of the Insurance Scheme (see THE LANCET, Jan. 31st, pp. 217–8); The Provision of Medical Benefit (Feb. 7th, pp. 301–3; Feb. 14th, pp. 355–6; Feb. 21st, pp. 403–5); Financial Provisions of the Act (Feb. 28th, pp. 454–7); Medical Certification and the Regional Medical Staff (March 7th, pp. 508–9); The Approved Societies and the Money Benefits (March 14th, pp. 561–3; March 21st, pp. 623–4); Evidence of the Hearts of Oak Society (March 28th, pp. 677–9); Evidence of the National Conference of Industrial Assurance Approved Societies and of the Manchester Unity Approved Society (April 4th, pp. 731–3); Evidence of Independent Order of Rechabites, of Rational Association Friendly Society, and of Miners' Societies (April 11th, pp. 784–6; April 18th, p. 839); Evidence of Mr. Alban Gordon (April 18th, pp. 839–40); Evidence of Joint Committee of Approved Societies, of Stock Exchange and Lloyds' Health Insurance Societies, and of Group of Catholic Approved Societies (April 25th, pp. 889–91); Evidence of the National Insurance Beneficent Society (May 2nd, pp. 943–4); Evidence of the British Medical Association (May 9th, pp. 993–5); Evidence of the British Dental Association and other Dental Organisations (May 16th, pp. 1044–6); Evidence of the Insurance Committees (May 23rd, pp. 1097–8); Evidence of Various Approved Societies (May 30th, pp. 1135–6).

Honorary Treasurer of the Association, and Dr. Stanley Hodgson, Chairman of the Salford Panel Committee.

(Q. 14605.) At the outset the representative character of the evidence was made clear, Dr. Brackenbury stating that there were only two main points upon which there was any difference of opinion. One was with regard to the inclusion of dependants in an insurance scheme, some considering it doubtful whether they should be included even on the restricted basis set out in the Memorandum, while others, a minority, regarded their inclusion as a matter of urgency. The other point was with regard to the question of an appeal to the courts of law, a considerable minority holding the view that there should be such an appeal on all grounds instead of on some only as proposed in the statement of evidence.

(Q. 14607–8.) Generally, the recommendations would be found to be in the direction of continuance of the present scheme with contractions in certain directions and extensions in others, considerable stress being laid on establishing and strengthening the relationship of such a scheme to the other health services, public and voluntary.

An Improved Atmosphere and an Improved Health.

(Q. 14612–20.) The panel service is working in an improved atmosphere. Doctors are coming on the panel in increasing numbers, and where in the profession there was formerly active antagonism in certain quarters, this has resolved itself into indifference. On the insured person's side, Dr. Brackenbury said :—

> (Q. 14612.) We have, as general practitioners, the almost universal experience that insured persons are much more willing to come to us and to take advantage of their opportunities instead of exhibiting prejudice or making the remark that they came unwillingly.

Insured persons seek advice in the early stages of disease, and this is directly preventive in its effects. The gain to the comfort of the individual in knowing that he can have medical attention whenever he needs it, and sickness benefit experience which points to a reduction in national sickness, both mean a considerable gain in the national health. As to the quality of the service, Dr. Brackenbury said that there was no truth in the statements made that the panel service was an inferior one.

> (Q. 14621.) Do you think that the insurance practitioners as a class give their professional best to the insured persons, though such service is given under a contract and paid by capitation and is under a certain degree of State regulation?—In spite of those three things I am sure it is a fact that each doctor in relation to his own patients does give of his professional best.

Dr. Cox added to this that the insurance system had given the medical profession itself a greater control over the service than it ever had before under any collective system, and this had given it an increased interest in the success of the system.

Complaints as to the London Service.

(Q. 14623–14654.) On a question here interposed by Sir Humphry Rolleston as to statements made to the Commission that in London there were more complaints about the service than elsewhere, Dr. Cardale said that in 1924 there were only 87 formal complaints as compared with about 7 million attendances—a quite insignificant fraction. Apart from formal complaints, Dr. Cardale suggested that much prejudice was created in London in regard to the service by occasional press stunts, and this was emphasised by Dr. Cox, who stated that there had always been a section of the press who would do almost anything to damage the Insurance Act. He instanced a visit to an editor to urge him to publish a letter which he had prepared in reply to a very damaging attack, and eventually extracts from Dr. Cox's letter appeared in such a way as to give a wrong impression. The editor told him quite deliberately: "You must remember we are not out to help to defend the Act; we are out to try to kill it."

Dr. Brackenbury pointed out that London and Edinburgh were very largely the centres of organised or expressed antagonism to the Act at the beginning, and that there was still a lower proportion of general practitioners doing insurance work in those places than elsewhere. To be perfectly fair Dr. Brackenbury added that :—

> (Q. 14653.) One must say that in the poorer parts of London there is a tendency sometimes, by no means always, and only in a minority of cases, to get a doctor who is himself a bird of passage there.

He also said :—

> We may have many insured persons concentrated much more largely than in any other place who are clerical workers or insured persons who are on the margin and who, in a few years' time, will be going out of insurance, and we find that that is the class of person who complains more about the working of the Act than any other, not really from facts but from prejudice, impressions derived from second-hand sources if you like. I think you will find amongst the real industrial population that there is no more feeling in London than there is elsewhere.

Persons to be Provided for.

(Q. 14671–2.) The number of general practitioners doing insurance work in relation to those not on the panel is roughly 3 to 2, the numbers being estimated at 11,700 and 10,000 respectively.

(Q. 14666.) As evidence of the extra work thrown on the insurance practitioner, Dr. Cox referred to the Plender Report issued when the Insurance Bill was being prepared in 1911, which showed that the average number of attendances on the population in certain industrial areas was 1·33 per year, whereas the insured person now gets not less than 3·75 attendances. For this reason amongst others it would appear that there must be some line of demarcation within the insurance scheme so that it should be available (Q. 14680) only for those persons who would be unable to obtain it without the help of that scheme. The application of this principle involves the question of a broad income limit.

> (Q. 14692.) In the public provision of education we have no such criterion. The public elementary schools are open to all, irrespective of income. Do you not think there is a parallel here?—No. I think it is a false parallel altogether. There would be a parallel if it is considered that the State ought to have full control of the provision of education on the one hand, and full control of the individual's health on the other, but we are presupposing that it is to be done by means of a contributory insurance scheme. If it is to be done by means of a contributory insurance scheme there is no parallel at all.

Correspondence to Private Practice.

(Q. 14710–14724.) With regard to the principle laid down in the Memorandum that the conditions of the insurance medical service should approximate as nearly as possible to those of private practice, Dr. Brackenbury said that they were in a condition of apprehension for the future rather than criticising the working of the scheme in the past. Among the really important things in this connexion was the individual relationship between the doctor and his patient.

> (Q. 14710.) Anything that encroaches upon the confidential individual relationship between doctor and patient we view with suspicion and with the feeling that it will, though it may have some other advantages which we are perfectly prepared to consider, destroy or tend to destroy what we believe to be one of the fundamental things that enables us to do the good work which we hope we are doing.

In later evidence Dr. Brackenbury pointed out that with one exception—

> (Q. 15213.) The contract and relationship between the doctor and the patient is the same in insurance practice as in private practice. In private practice there is, though not a written, a perfectly legal contractual relationship between the doctor and the patient. The doctor undertakes to devote his utmost skill and care to the attention of the patient, and if he does not do it the patient can sue him at law. There is, therefore, a definite legal contractual relationship, though unwritten, between doctor and patient.

In private practice, it is true that a doctor has a right to refuse to attend an applicant even in an emergency. Under the insurance system he has no such right,

so that with that one exception, which is after all scarcely an exception at all, because it is merely putting into a contract what is habitually done from motives of humanity, the relationship between doctor and patient is exactly the same whether under the insurance system or otherwise.

In regard to free choice of doctor, Dr. Cox said that this was not a fetish, but a fundamental of human nature.

(Q. 11717.) I have never yet myself met any individual who would not object very strongly to being told that he could not have his own choice—whether it was foolish or not—in the matter of a doctor. In fact, there are some people who are so foolish as to want to choose their own tailor or their own Member of Parliament, or other things which are much less important.

The Objection to Clinics and to a State Medical Service.

In explanation of their objections to a system of clinics the witnesses said that they had in mind premises staffed by a limited number of persons, and limited to a certain extent of practice. In certain rural areas and in certain densely populated industrial areas it might be convenient to have a common consulting-room and surgery at the same premises rather than have the poor rooms which doctors in those poor areas can manage to obtain.

(Q. 11720.) We have no objection to the premises as such in cases where it seems desirable to provide them, provided the other circumstances can remain the same, that is to say, that every doctor can have access to them for his own patients and that any patient is not obliged to be attended by a particular doctor.

Clinics, however, as generally understood, diminished freedom of choice and moved away from the intimate individual relationship of doctor and patient towards a State medical service.

On this question generally Dr. Bolam said:—

(Q. 11779.) May I say, as one who is not an insurance doctor, that the feeling in the profession is that the prime relationship should be between the doctor and the individual, and not between the doctor and a Government department, or any lay body. That is the essence of the whole matter. . . . In the case of a purely whole-time State-salaried medical service there is not the incentive to deserve the confidence of the individual. The effort is . . . directed rather in other channels.

Questioned as to the possibility of a national medical service permitting of a choice of doctor, Dr. Brackenbury replied:—

(Q. 11767.) If you can elaborate a National Health service scheme which will give as great freedom of choice to the individual patient as exists under the present circumstances, of course that objection falls to the ground; but we have not seen any approach to that in any national scheme.

Surgery Accommodation.

(Q. 11741–3.) Complaints as to surgery and waiting-room accommodation have been very few and not very important.

They really came largely during the tremendous influenza epidemic of 1918 when there were people who had to wait even outside to see the doctor, because there was no room in the waiting-room. You cannot make in private houses or in surgeries, or even in institutions, complete provision which would always cover the biggest emergency.

In some crowded areas there are actual physical and structural difficulties in improving the accommodation, and the inconvenience is felt equally by private and insurance patients.

A Bias Towards Prevention.

(Q. 11752.) As illustrations of the bias towards prevention in insurance practice, cases were quoted of an insurance practitioner who sought out his patients during an influenza epidemic and offered them preventive inoculation, and of another delivering health lectures to his patients.

(Q. 11828.) This bias towards prevention was cited later as the principal advantage of a capitation system of payment as compared with that of payment by attendance, where there must be a bias away from prevention and in the direction of multiplying attendances.

(*To be continued.*)

THE GENERAL MEDICAL COUNCIL.

SUMMER SESSION.

PENAL CASES.

EIGHTEEN penal cases came before the Council during the session. The cases were heard in public; the Council deliberated on them in camera, and the results were publicly announced as usual.

TUESDAY, MAY 26TH.

Cases Reported by the Dental Board.

The following cases were reported by the Dental Board of the United Kingdom to the General Medical Council.

The Case of John Begg, registered on Dec. 3rd, 1904, as of 11, Montgomery-street, Edinburgh, L.D.S.R.C.S. Edin., 1901, was considered by the Dental Board on May 12th. Mr. Begg had been convicted at the Edinburgh police-court on three occasions for drunkenness, and the Board found that his name ought to be erased from the Dentists Register. The Council considered the case and remitted it back to the Dental Board for further inquiry and report.

The Case of Samuel Robertson Crosbie, registered on March 3rd, 1923, as of 21, Hamilton-street, Camden Town, London, N.W. 1, "Dentist, 1921" was considered by the Dental Board of the United Kingdom on May 12th. The Dental Board, having considered the conviction against Mr. Crosbie, reported as follows: On May 12th, 1925, the said Samuel Robertson Crosbie attended before the Board, and was duly heard. Mr. Crosbie asked for an adjournment for three months or until the next session of the Board, on the ground that he hoped to have his case reopened in the Court of Criminal Appeal or by the Home Secretary. Mr. Crosbie had been convicted at the Essex Quarter Sessions held at Chelmsford on Jan. 2nd, 1924, of embezzlement and fraud and had been sentenced to 12 months' imprisonment with hard labour. The Dental Board found that his name ought to be erased from the Dentists Register. The Council directed that it be erased.

The Case of James Gray, registered on June 25th, 1924, as of 16, Eglinton-street, Belfast, "Dentist, 1921," was considered. The Dental Board reported that Mr. Gray had systematically canvassed in Belfast for patients by personal visits and by employing an agent or agents to canvass on his behalf. The Board found that his name ought to be erased from the Dentists Register. The Council directed that it be erased.

The following cases concerning medical practitioners were considered by the Council.

The Case of Shridhar Bheekajee Gadgil.—This practitioner, registered as c/o Nat. Bk. of India, Fort, Bombay, L.M.S. U. Bombay, 1808; M. 1900, F. 1915, R.C.S. Eng.; L.R.C.P. Lond., 1900, whose case was adjourned from May 28th, 1924, had been convicted on Sept. 21st, 1923, and fined for insulting behaviour. Dr. Gadgil was present accompanied by Mr. Oswald Hempson, his solicitor. The President stated that Dr. Gadgil could not be tendered as a witness as the Council had already decided that the conviction had been proved. Further letters of recommendation from Dr. Gadgil's professional brethren were put in. The Council decided not to erase Dr. Gadgil's name from the Medical Register.

The Cases of John Joseph Brennan and Vivian Thomas Pearce Webster.—The case of John Joseph Brennan, registered as of Maeryrhaf, The Walk, Merthyr Tydfil, L.R.C.P. Edin., 1892; L.R.C.S. Edin., 1892; L.F.P.S. Glasg., 1892, had been adjourned from Nov. 27th, 1924. Dr. Brennan had been charged with signing and issuing a medical certificate, dated March 26th, 1924, which was "untrue, misleading, or improper." Vivian Thomas Pearce Webster, registered as of Tygwyn, Merthyr Tydfil, M.R.C.S. Eng., 1910; L.R.C.P. Lond., 1910, had a similar charge laid against him. His case had also been adjourned from Nov. 27th, 1924. As both these practitioners had been warned at the last session of the Council as to the gravity of lax certification, and having regard to their conduct since the last hearing, the Council did not see fit to erase their names from the Register.

The Case of Henry Love, registered as of Avoca, Mitcham, Surrey, M.B., U. Dub., 1878; L.R.C.S. Irel., 1878, adjourned from May 28th, 1924, was that he had, in contravention of the Midwives Acts of 1902 and 1918, enabled uncertified women to act as midwives. The Council, having considered the evidence as to Dr. Love's conduct in the interval from his brother practitioners, did not see fit to erase his name from the Medical Register.

The Case of Henry Spencer Hughes, registered as of Galen House, Lozells-road, Birmingham, M.R.C.S. Eng., 1891; L.R.C.P. Lond., 1894, adjourned from May 30th, 1924, was next dealt with. He had been arraigned on a similar charge to the preceding case. The Council gave a decision as in the case of Dr. Love.

The Case of Nowroji Mervanji Tarachand, registered as of Mansfield, Nottingham, M.R.C.S. Eng., 1893; L.R.C.P. Lond., 1893, adjourned from May 28th, 1924, was concerned with signing National Health Insurance certificates in a misleading manner. The Council, taking into account Dr. Tarachand's assurance as to his future attitude as regards truthful and accurate certification, did not see fit to erase his name from the Medical Register.

WEDNESDAY, MAY 27TH.

The Case of Henry James Burke, M.C.—This practitioner, registered as of Ivy House, Hadfield, Derbyshire, L., L.M. 1913, R.C.P. Irel., L., L.M. 1913, R.C.S. Irel., had been convicted: (1) At the Glossop police-court of driving a motor-car in a manner dangerous to the public; (2) at the same police-court, of being drunk in charge of a motor-car; and (3) at the Mottram Petty Sessions, of being drunk in charge of a motor-car. Dr. Burke attended, and was accompanied by Mr. Whittingham, of Manchester, his solicitor, who put in testimonials from brother practitioners. These convictions were proved to the satisfaction of the Council, but judgment was postponed until May next, with the usual proviso as to character and conduct in the interval. The President commented on the significance of such convictions which indicated a habit that might be dangerous to a professional man, to the public, and to the patients under his charge.

The Case of Sureswar Sarkar.—This practitioner, registered as c/o Grindlay and Co., 54, Parliament-street, London, S.W. 1, L.R.C.P. Edin., 1907; L.R.C.S. Edin., 1907; L.F.P.S. Glasg., 1907; L.M.S.U. Calcutta, 1905, had been convicted at the Assizes held at Leeds on March 16th, 1925: (1) Of attempting at Sheffield in January, 1924, to rape Lilian May Potter; (2) of indecently assaulting her and like offences on other dates, of raping her and administering a drug to her with intent to stupefy in May 1924; and (3) of indecently assaulting Eva Potter in January, 1924. The sentence was five years' penal servitude. Dr. Sarkar did not attend in answer to his notice, nor was he represented. The Council directed the Registrar to erase Dr. Sarkar's name from the Medical Register.

The Case of John Edward Rees.—This practitioner, registered as of Glandwr, Tresaith, Cardiganshire, L.R.C.P. Edin., 1913; L.R.C.S. Edin., 1913; L.R.F.P.S. Glasg., 1913, had been convicted of the following misdemeanours, viz.:—(1) On April 5th, 1921, at the Lower Troedyram Petty Sessions (Cardigan) of being found drunk on the highway; (2) on May 15th, 1922, at the Cardigan Borough Petty Sessions of being found drunk on the highway in charge of a motor cycle; (3) on May 15th, 1922, at the Cardigan Borough Petty Sessions of being found drunk on licensed premises; (4) on Feb. 3rd, 1925, at the Newcastle-Emlyn Petty Sessions of being found drunk in charge of a motor car; (5) on Feb. 3rd, 1925, at the Newcastle-Emlyn Petty Sessions of driving a motor car on the highway in a manner dangerous to the public. Dr. Rees attended in answer to his notice, accompanied by Mr. Daniel Johns, his counsel, instructed by Mr. J. C. Williams, solicitor, of Carmarthen. Witnesses were called to testify as to Dr. Rees's character, and a petition signed in his district against his erasure from the Register was put in. Judgment was postponed until May next with the usual proviso as to character and conduct in the interval.

The Case of Albert Edward Woolfe Sandelson.—This practitioner, registered as of 317, Bury New-road, Higher Broughton, Manchester, L.A.H. Dub., 1923, had been summoned to appear before the Council on the instance of the Salford Local Medical and Panel Committee, it being charged against him that he had made certain false entries in his day-book with regard to a patient, Thomas Walter Lodge, under the Medical Benefit Regulations, 1921, for the purpose of claiming remuneration in respect of attendance on a patient from the Salford Insurance Committee. Dr. Sandelson attended in answer to his notice, accompanied by Mr. T. Eastham, K.C., with him Mr. Melville, his counsel, instructed by Gisborne and Co., solicitors. In the absence of a complainant the Council's solicitor placed the facts before the Council. He stated that the matter was brought to the notice of the Council by the Ministry of Health and put in a copy of the finding of the Salford Committee and other documents relative thereto. Mr. Eastham then addressed the Council on behalf of Dr. Sandelson, and read statutory declarations by Mrs. Lodge and her husband. These were in certain points at variance with the evidence they had given before the Salford Committee. The judgment of the Council was that the facts alleged against Dr. Sandelson had not been proved to the satisfaction of the Council.

THURSDAY, MAY 28TH.

The Case of Alex. John Douglas Cameron.—This practitioner, registered as of Adelaide House, Northampton, M.B., Ch.B., 1909, U. Aberd., was on Oct. 17th, 1924, convicted of unlawfully killing John Rowlatt Corner, and was sentenced to be imprisoned in the Second Division for nine calendar months. Dr. Cameron attended in answer to his notice, accompanied by Mr. Alex. Neilson, K.C., his counsel, instructed by Messrs. Le Brasseur and Oakley, solicitors for the London and Counties Medical Protection Society. The Council's solicitor placed the facts before the Council. He put in the certificate of conviction and read extracts from the depositions at the trial. Mr. Neilson addressed the Council on behalf of Dr. Cameron, read nine statutory declarations testifying to the good character of Dr. Cameron, and put in a copy of the judge's summing-up at the trial. The Council decided not to erase Dr. Cameron's name from the Medical Register.

The Case of Sydney Edgar Price.—This practitioner, registered as of Dudley Port House, Dudley Port, Tipton, Staffs, L.R.C.P. Edin., 1899; L.R.C.S. Edin., 1899; L.F.P.S. Glasg., 1899, appeared on the following charge: That, being a registered medical practitioner, he was responsible for and, moreover, countenanced the issue to 11 patients of 32 misleading and improper National Health Insurance certificates, in that he allowed his clerk dispenser to sign and issue them in his (Dr. Price's) name and on his behalf. Particulars were then given. Dr. Price attended in answer to his notice, attended by Sir Henry Maddocks, K.C., his counsel, instructed by Mr. F. W. Green, solicitor, of Dudley. The Council's solicitor handed in the report of the Medical Services Subcommittee of the Staffordshire Insurance Committee. Sir Henry Maddocks tendered Dr. Price as a witness on his own behalf and examined him. Dr. Price was cross-examined by the Council's solicitor and answered questions put to him by the chair, by members of the Council through the chair, and by the legal assessor. In the course of the cross-examination of Dr. Price, it was elicited that Dr. Price had 2500 patients on his panel, for 700 of which he himself did the dispensing. During the month of January, 1925, Dr. Price's signature was attached to 140 insurance prescriptions, only one of which signatures he recognised as being his own. For the defence it was urged that Dr. Price's clerk had been with him for 16 years. The clerk had since died. The Council found the facts alleged against Dr. Price to have been proved, and the Registrar was directed to erase Dr. Price's name from the Medical Register.

The Case of Charles Nathaniel Barton.—This practitioner, registered as of 88, Redcliffe-gardens, South Kensington, London, S.W. 10, L.S.A. Lond., 1896; M.R.C.S. Eng., 1897; L.R.C.P. Lond., 1897, was arraigned on the charge of committing adultery with a married woman with whom and with whose family he stood in professional relationship, of which adultery he was found guilty by the decree of the Probate, Divorce, and Admiralty Division (Divorce) of the High Court of Justice, dated Oct. 22nd, 1924, and made absolute on May 4th, 1925. Dr. Barton appeared in answer to his notice, accompanied by Mr. Oswald Hempson, his solicitor. The Council's solicitor placed the facts before the Council. He stated that the divorce case was not defended, but that Dr. Barton now denied professional relationship.

The hearing of this case was concluded on Friday, May 29th. The Council found that the facts alleged against Dr. Barton had not been proved to the satisfaction of the Council.

The Case of Austin Heron.—This practitioner, registered as of Mullindrait House, Stranorlar, Co. Donegal, L., L.M. 1924, R.C.P. Irel., L., L.M. 1924, R.C.S. Irel., had been convicted on Feb. 12th, 1925 (in the name of William Gallagher), at the Sutton Petty Sessions of "unlawfully, wilfully, openly, lewdly, and obscenely" exposing his person in a public highway with intent thereby to insult certain females. Dr. Heron appeared in answer to his notice. He was not accompanied by counsel or solicitor. The Council found that the conviction was proved to the Council's satisfaction, but judgment was postponed for a year with the usual proviso as to character and conduct in the interval.

Friday, May 29th.

The Case of Wilfred Edgar Levinson.—The case of W. E. Levinson, registered as of 5, College-road, Brighton, L.R.C.P. Lond., 1911; M.R.C.S. Eng., 1911, was considered on Friday afternoon and the hearing was continued on Saturday, May 30th. The hearing not being concluded by 1 P.M. on this day, the counsel moved an adjournment until June 4th, when the hearing of this case will be resumed.

Reports of Committees and Other Business.

Restorations to Register.

At a meeting of the Executive Committee on Monday, May 25th the Registrar reported that, the prescribed conditions having been duly fulfilled in each case, the names of the undermentioned persons had been restored to the Medical Register, from which they had been erased in conformity with the provisions of Section 14 of the Medical Act, 1858:—

Charles T. Andrew (S.), Edward V. Briscoe, Muljibhai K. Dalal (S.), Robert E. Cameron (S.), Stanley D. Craig (S.), Alban Dixon, John Holmes, Clermont Grantham-Hill, George F. Hulme (S.), Edward C. MacDermot (I.), Marion E. Mackenzie (S.), Farquhar McVean (S.), Leopoldo C. Mascarenhas, Arthur G. M. Middleton, Louis S. F. R. Norman (S.), Thomas M. O'Donnell (I.), Reginald F. M. Overton (I.), Hon. George H. Scott (S.), Henry A. Speed, and John Wreford.

S.=Scotland; I.=Ireland.

Reciprocity of Medical Practice.

As a result of the re-establishment of reciprocity of medical practice between Great Britain and Italy the Committee resolved to place on record their gratification at the satisfactory conclusion of this matter; and that the thanks of the Council be transmitted to the Privy Council, the Foreign Office, and the British Ambassador at Rome for their valuable assistance.

A letter was read from the Registrar of the College of Physicians and Surgeons of Province of Saskatchewan saying that there was no desire to retain British reciprocity if that involved inter-provincial reciprocity and reciprocity with countries other than Great Britain. It was never their intention that reciprocity should include any except bona-fide British graduates registered by the Council. A letter was written to Saskatchewan on March 21st, 1925, asking if the Council had met, and if they had any further observations on the subject to send. A reply was received, dated May 4th, stating that at the last meeting of the Council no further action was taken. They did not wish to terminate British reciprocity, in so far as bona-fide British graduates were concerned; but, if it meant indirect registration, this could not be agreed to. It was therefore resolved:—

> That a communication be addressed to the Lord President, pointing out that as reciprocity between Saskatchewan and this country had ceased, owing to the recent change of the Provincial law, His Majesty in Council should be moved to rescind the Order in Council of 1915, applying Part II. of the Medical Act, 1886, to the Province of Saskatchewan.

With regard to reciprocity in New Brunswick, following several communications, it was resolved:—

> That a further communication be addressed to the Council of Physicians and Surgeons of New Brunswick, pointing out that the General Council have no power to agree to their suggestions, and that, unless full reciprocity is maintained, the Council will be compelled to take the same action as in the case of Saskatchewan.

Indian Universities.

A communication was read from the India Office stating that Colonel R. A. Needham, C.I.E., I.M.S., had been reappointed to act as inspector on behalf of the Council. Reports by Colonel Needham in regard to the Universities of Bombay and Lucknow were presented to the Committee. It was resolved:—

> (*a*) That under the same conditions as before, the recognition granted to the M.B., B.S. degrees of Bombay and Lucknow be continued till June 30th, 1926; (*b*) to inquire what are the relations between the Municipal College of Bombay and the University; the Lady Hardinge College, Delhi, and the University of Lahore; and the Vizagapatam College and the University of Madras.

Tanganyika.

A communication was read, dated Feb. 6th, 1925, from the Principal Medical Officer at Dar-es-Salaam, saying that the Government medical staff and the few private practitioners were inadequate for the wants of the country, and that the exclusion of medical aid from the native population was a policy that should be avoided as far as possible. He stated that an M.D. of Illinois, of the Lutheran Mission at Moshi, had applied for registration, and that sub-assistant surgeons, whose qualifications did not permit of registration, might be licensed while in Government service. It was suggested that the Principal Medical Officer or a board of three registered practitioners, one of whom should be the deputy P.M.O., might be empowered to use their discretion in licensing to practise such persons as they considered possessed suitable or sufficient medical qualifications for the purpose, keeping in view the limitation of their field of work, except in emergency, to the native population. By direction of the President the P.M.O. was informed that no objection would be made by the Council if, by an amendment to the ordinance, power were given to the proposed board of three to issue an annual licence to such persons as were named. The Committee approved the reply sent to the P.M.O.

South Australia.

At the meeting of the Committee on May 22nd, 1922, a communication was read from the South Australia Medical Board, calling attention to their Medical Act of 1921, in which it was prescribed, inter alia, that no registration fee should be payable by a person already registered in a country forming part of His Majesty's Dominions, if there were reciprocal arrangements in regard to the matter.

and asking for its consideration by the Council. The Committee resolved :—

(a) That the South Australian Medical Board be informed that the Medical Council has no power to discriminate between one class of registrable practitioners and any other in respect of original registration fees; (b) that the Board be further informed that the Council has no power to levy an annual fee on registered practitioners in lieu of one commuted fee, as appears to be the case in South Australia.

A further communication was read, dated March 17th, 1925, from the South Australia Medical Board, suggesting that there was no actual legal difficulty in the way of effecting reciprocity of registration between Great Britain and the State of South Australia on payment of a nominal fee, and asking that the matter should once more receive consideration. It was resolved :—

That the Committee adhere to their view of the English law as to their powers, and that they have nothing further to add to their previous resolution.

Zanzibar.

A communication was read, dated May 15th, 1925, from the Colonial Office, transmitting a copy of the Medical Practitioners Decree, 1925, of Zanzibar, which was a decree to compel medical practitioners to notify deaths in certain cases.

Methylated Spirits.

A communication was read from the Customs House, of April 9th, 1925, enclosing draft regulations, and stating that to meet objections which have been raised to the inclusion of pyridine in mineralised methylated spirits it was proposed as an experimental measure to allow the sale of industrial methylated spirits—i.e., unpyridinised—for medical and surgical purposes other than internal use by registered chemists and druggists under certain conditions. It was resolved to refer the matter to the Pharmacopœia Committee.

Transfer from Colonial List to English List.

The Committee considered an application from Alfred Spitteler, who was registered in the Colonial List on Nov. 14th, 1899, in virtue of the degrees of M.D., C.M. 1897, U. Madras. He desired to have his entry transferred to the English List, as he had since obtained the qualifications of M.R.C.S. Eng. 1905, L.R.C.P. Lond. 1905, and D.P.H. Lond. 1906. It was resolved :—

That the name could be registered in the British List in virtue of the British qualifications on payment of the usual fees for the registration of additional qualifications, and could appear in both lists, with a cross-reference; but that the name could not be transferred from the Colonial to the British list.

Cancellations.

A communication was read from the Royal Faculty of Physicians and Surgeons of Glasgow stating that the diploma of Mr. Haydn Brown had been recalled and cancelled during the pleasure of the Faculty. (This practitioner still possessed the L.R.C.P. Edin., 1892, and the L.R.C.S. Edin., 1892.)

Communications from the Royal Faculty of Physicians and Surgeons of Glasgow were read stating that the diploma of Mr. D. W. Anderson had been recalled and cancelled during the pleasure of the Faculty, and from the Royal College of Physicians of Edinburgh, stating that the diploma of Mr. Anderson had been suspended sine die.

Examination Committee.

This report was received and its recommendations adopted on the motion of Sir Norman Walker (chairman of the Committee) on May 29th. In the discussion following the motion, Sir Leslie Mackenzie commented on the fact that there was no examination on infectious diseases and said that the definition of infectious diseases was widening every day. Prof. Littlejohn said that in some of the examining bodies forensic medicine was not included in the final examination. He said he would raise this matter again at the next session on another report.

Education Committee.

This report was received and entered on the minutes on the motion of Dr. J. Y. Mackay (chairman of the Committee). It dealt with questions concerning the acceptance of the senior leaving certificates of the Ministry of Education of Northern Ireland, leaving certificates of the Intermediate Education Board of the Irish Free State, and the certificate of preliminary education given by the Provincial Medical Board of Nova Scotia. It was resolved to accept these certificates with certain provisos.

Public Health Committee.

This report was presented on Friday, May 29th, by Sir John Moore, chairman of the Committee. The first part of the report related to annual returns and interpretation of rules with regard to diplomas in public health during the year 1924: 465 candidates were examined for the First Examination, of whom 319, or 68·6 per cent., passed, and 146, or 31·4 per cent., were rejected. For the Second and Final Examination, 406 candidates presented themselves, of whom 312, or 76·85 passed, and 94, or 23·15 per cent., failed. During the year the University of Liverpool gave exemption to four persons, but none of them called for special comment. No other body granted exemption during the year.

Communications from the University of Liverpool suggested (a) that a sanitary staff officer of the R.A.M.C. might be allowed to give the certificate in public health administration required by Rule 3 (1) (f) of the old rules so far as venereal diseases, inspection and control of food, and inspection of premises were concerned, and that a medical officer of health might be given discretionary powers to accept such certificates from army candidates; and (b) that the responsibility of accepting a certificate of a duly qualified M.O.H. in the Dominions (or a sanitary staff officer in the Army) might rest with the University. It was resolved :—

That the Committee were unable to entertain these proposals, or to grant the suggested concessions; and that the University be referred to the Council's letter of Jan. 9th, 1925.

A communication has been received from the University of Toronto asking what steps must be taken in order to have the D.P.H. of that University recognised. The University were informed that the recognition could not be granted under the provisions of Section 21 of the Medical Act, 1886.

A communication, dated April 6th, 1925, was received from the University of Lucknow forwarding a copy of the following resolution passed at the meeting of the Academic Council of the University on Sept. 24th, 1924 :—

That the General Medical Council be approached to recommend to the examining bodies in Great Britain and Ireland that the latter be moved to grant exemption to those candidates who have successfully completed training at the Lucknow University in one or more subjects (excepting English sanitary law) for the Diploma in Public Health so as to enable them to appear for the D.P.H. of those bodies without undergoing a further course of instruction in those subjects.

It was resolved :—

That the Council cannot delegate to any licensing body in Great Britain and Ireland the power of granting such general exemptions as are asked for in the resolution of the Academic Council of the Lucknow University, dated Sept. 24th, 1924.

Applications in exceptional cases for concessions with regard to study for the Diploma in Public Health which had been submitted by the English Conjoint Board were considered and decisions were given in accordance with the rules.

Pharmacopœia Committee.

This report, on the motion of Sir Nestor Tirard, was received and approved on May 29th. The number of copies of the British Pharmacopœia, 1914, sold by the publishers between Nov. 24th, 1924, and May 22nd, 1925, was 910 copies. The number sold in the year ending May 22nd, 1925, was 2155 copies. This number was slightly lower than that for the preceding year. The total number sold since the date of publication was 49,007. A new issue of 5000 copies has been prepared. No typographical corrections were found to be required. The Government has appointed four delegates to the international conference on the unification of pharmacopœial formulæ to be held in Brussels next September, and had asked Sir Nestor Tirard, as representing the Committee, to act as chairman of the British delegation. The Committee resolved that the time had arrived for taking preliminary steps towards a revision of the British Pharmacopœia, 1914, and had given instructions for the usual inquiries to be addressed to the several governmental and medical authorities concerned, and to other bodies interested. The preparation of a new edition would necessarily occupy several years and would entail a large amount of work, to assist in which Dr. Philip Hamill, lecturer on pharmacology and therapeutics at St. Bartholomew's Hospital Medical School, had been appointed as secretary.

Dental Education and Examination Committee.

The report on the inspection of the qualifying examinations in dentistry and dental surgery held during the years 1923 and 1924 was received and adopted on the motion of Sir James Hodsdon, chairman of the Committee. The last cycle of inspections of the examinations for degrees or diplomas qualifying for registration in the Dentists Register took place in 1914. At the May session, 1923, Mr. J. Howard Mummery was appointed inspector, and the first inspection took place in June, 1923, the last in December, 1924. The inspector reported upon all the Final Examinations for a degree or licence in dentistry or dental surgery, with the exceptions of the University of London and the University College, Cork (National University of Ireland), and Mr. Mummery was thanked by the Council for his valuable reports and suggestions. The recommendations ending the report of the Committee having been moved, were considered in committee by the whole Council, and were adopted in amended form.

Finance Committee.

The report of the Finance Committee for the year 1924, presented by Sir Holburt J. Waring, Chairman of the Committee, was eminently satisfactory, the assets of the General and Branch Councils having increased by practically £8000. About £7000 of this is shown to be a surplus, and while the total income is higher by £1850, the total expenses have only been higher by £841. A wise warning closes the report, to the effect that the considerable savings which have been effected for some time past will enable the Council to meet deficiencies should they occur in the course of the next few years. The number of students entering for the final examination during this year will again be high, but the highest level of receipts has probably been passed.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED MAY 23RD, 1925.

Notifications.—The following cases of infectious disease were notified during the week, namely:—Small-pox, 130; scarlet fever, 1629; diphtheria, 752; enteric fever, 37; pneumonia, 1080; puerperal fever, 43; cerebro-spinal fever, 11; acute poliomyelitis, 4; encephalitis lethargica, 4; dysentery, 2; ophthalmia neonatorum, 114. There were no cases of cholera, plague, or typhus fever notified during the week. The number of small-pox cases showed a decrease of 21 from the number for the preceding week.

Deaths.—In the aggregate of great towns, including London, there were 2 deaths from enteric fever, 105 from measles, 16 from scarlet fever, 57 from whooping-cough, 22 from diphtheria, and 62 from influenza, as compared with 55, 68, 100, and 154 in the four preceding weeks. In London the deaths from influenza numbered 10, from whooping-cough 20, and from diphtheria 6.

SMALL-POX IN HERTFORDSHIRE.

A CASE of small-pox has been notified from the district of Radlett, Hertfordshire. The patient is the Vicar of Radlett, who returned from Switzerland on May 14th. Dr. Hyslop Thomson, county medical officer of health, gives us the following information: The rash appeared on May 28th. The patient had been twice vaccinated successfully, the last time in 1910. He was again vaccinated in 1919 but ineffectively. The type of small-pox appears to be the Eastern type *modified to some extent by vaccination*; the patient had a severe illness with an initial temperature of 103°, but is now improving. The precautionary measures taken have consisted in closing the schools, vaccinating and supervising all direct contacts, and carrying out disinfectant measures in the district. No further case has been notified up to date.

Reports and Analytical Records.

INFANTILE DIETETIC MEALS: (1) MEAD'S RECOLAC; (2) MEAD'S CERTIFIED COD-LIVER OIL.

(MEAD, JOHNSON AND CO., 40–42, LEXINGTON-STREET, W. 1.)

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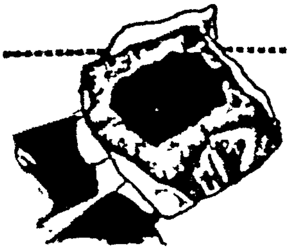

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THE LANCET.

LONDON: SATURDAY, JUNE 6, 1925.

THE INTER-STATE ASSEMBLY.

THE Inter-State Post-Graduate Assembly of America, directed by the Tri-State District Medical Association of that country, have held their annual Congress in London this week under the presidency of Dr. Charles Mayo, and from the report we are able to give in other columns it will be gathered that the occasion has been thoroughly successful. The doctors from the States and from the Dominion of Canada have been offered in London full opportunities for a great post-graduate gathering; our Crown and Government, our medical organisations and institutions, with their authorities and staffs have coöperated to welcome the visitors from scientific and social aspects alike. The gathering is one of real scientific importance, as a definite movement of coöperation between the English-speaking peoples for the furtherance of medical progress. The movement, thus described by Dr. Charles Mayo at the inaugural session of the Assembly, cannot have any restriction implied by the use of a language; it is the glory of medicine that it knows no national confines, and what America, this country, and our dependencies do to advance medical learning will benefit all nations and stimulate all to add to the common wisdom.

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PENALISING PROFESSIONAL EFFICIENCY.

IN a test case recently decided by Mr. Justice Rowlatt, the High Court has held that for income-tax purposes a county medical officer of health is not entitled to deduct the amount of his subscriptions to medical societies. The particular medical officer subscribed to the Royal Society of Medicine, the Society of Medical Officers of Health, the Royal Institute of Public Health, and the Association of County Medical Officers of Health. It is certainly a liberal list, but the Inland Revenue Authorities will not let him deduct any of the four subscriptions. They do not say the list is too long; they merely say that as a county medical officer he is not obliged to be a member of any of these bodies in order to earn his salary or hold his office. On the other side it was urged that, if a medical officer subscribes to institutions of this kind, he spends the money "wholly, exclusively, and necessarily" in the course of discharging his duties efficiently. Towards this apparently unanswerable contention the High Court was unsympathetic. Subscriptions to professional societies, the cost of buying professional literature, and any other expenses which keep a man fit for the work he is doing, cannot be deducted. If this concession were allowed, said the learned judge, anybody belonging to any profession would deduct all that sort of expenditure, and there would be no end to it.

If this is the law, we think it time it was changed. There is a matter of principle at stake. The State ought to give no kind of encouragement to the idea that, once a man has obtained a post as health officer, he can go to sleep professionally for the rest of his life. Medical science does not stand still. A medical officer who shuts his eyes to fresh discoveries or to the records of experience in other areas is like a lawyer who ignores current law reports and takes no notice of new Acts of Parliament. To keep abreast of the advances in sanitary science is a task which needs all the stimulus and assistance which medical societies can give. To perform this task is the first duty of a health officer. It should be the law that a professional man, in calculating his taxable income, may deduct whatever charges are reasonably necessary to maintain professional efficiency. The words "reasonably necessary" may be a little indefinite, but Parliament has not been afraid to use them in recent legislation. In practice an allowance of, let us say, £10 might well be permitted (subject to production of receipts if required) for cost of membership of professional societies and purchase of professional literature. In the case under discussion the sum at stake between the Inland Revenue and its victim was a matter of a few shillings only. The ingenuity of counsel for the Inland Revenue might, we suggest, be better employed in examining and checking serious cases of tax evasion in other walks of life rather than in penalising the efficiency of professional classes on whom the income-tax already presses hardly enough.

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ULTRA-VIOLET IRRADIATION.

THE use of the ultra-violet end of the spectrum in the treatment of disease has arrived with rather disconcerting rapidity. The Royal Institute of Public Health devoted to the subject nearly the whole of one of its discussions at Brighton during the last week-end, and Dr. J. Saidman's monograph,[1] which has just appeared, is based on an analysis of 600 published articles as well as on 12,000 applications of his own. The medical profession generally regards with just suspicion any therapeutic agent which is claimed to have a beneficial effect on a large number of varied conditions. An exception may have to be made in the case of ultra-violet irradiation. Its use in the cure and prevention of rickets, first described by Huldschinsky in 1919, has now passed from the realm of medical novelty to that of orthodox treatment. The same might be said of its use in surgical tuberculosis. Apart from these two outstanding examples, there are numerous conditions, seemingly unrelated, which are being at present tentatively treated by light therapy with encouraging results. But the ramifications of this new science, for such it virtually is, reach far beyond the sphere of practical medicine. One or two examples from the recent literature may serve to illustrate this. In a paper on Irradiated Foods and Irradiated Organic Compounds,[2] Steenbock and Daniels briefly review the salient points in the relationship between the action of cod-liver oil and of ultra-violet light, and discuss the evidence which led Steenbock and his collaborators to irradiate the food in place of the subject. The position at present is that by irradiating such foods as wheat, rolled oats, meat, milk, and egg yolk they claim to be able to confer on them anti-rachitic properties. The compounds capable of activation are probably cholesterol in animal tissue and the phytosterols in plants. These researches lead very close to the core of the whole vitamin problem, and from the practical point of view they suggest new possibilities in therapeutics. In another sphere, that of agriculture, a paper by Dr. J. M. Henderson, from the Rowett Institute, Aberdeen,[3] opens up yet wider possibilities as to the part artificial ultra-violet light may yet play. In this work a very definite quantitative estimate of the effect of irradiation on calcium and phosphorus retention was obtained by balance experiments on growing pigs. The pig is notoriously susceptible to rickets and the demand of this quickly-growing animal for those elements is very great. The effect of irradiation is correspondingly marked. In some cases where rations badly balanced as regards the mineral content were being given a daily retention of 0·5 g. CaO was raised to 2·5 g. In view of these findings it would seem that the byre lit by rows of carbon arc lamps in winter, or even the irradiated pig-stye is no mere fanciful picture. The question suggests itself as to the relative importance of irradiation of the subject on the one hand and of the food on the other. While no doubt a great practical future lies with food irradiation it seems improbable that this method can call out all the many reactions which are known to result from direct irradiation of the organism.

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[1] *Les Rayons Ultra-violets en Thérapeutique.* Paris: Gaston Doin. Fr.65.

[2] Journal of the American Medical Association, vol. lxxxiv., No. 15.

[3] Biochemical Journal, xix., 1, 1925.

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THE SLEEPING SICKNESS COMMISSION.

The interest shown by the Health Organisation of the League of Nations in tropical disease is a very welcome and opportune development of the League's work. Many primitive countries still offer a fruitful field for investigation, and nowhere is this better exemplified than in Central Africa. An international investigation upon the great scourge which hangs like a thunder cloud over many of the most fertile regions of the earth will be welcomed by all who have the welfare of the Dark Continent at heart. Whole-hearted international coöperation is essential to control the spread of trypanosomiasis; without it the most energetic and drastic measures applied by individual governments must fail. Central Africa is controlled by six European powers, and the time has now come when a combined effort is necessary in order to rid the whole region of the one scourge which is retarding its commercial and intellectual development. Measures designed to limit the spread of trypanosomiasis, or, if possible, to exterminate it, must necessarily be based upon a complete knowledge of the many factors upon which the spread of the disease depends; it is most necessary that existing gaps in our knowledge should be filled as far as is possible. The conference which recently assembled in London under the chairmanship of Mr. W. G. Ormsby-Gore, as reported in our last issue, was composed of experts of world-wide reputations. Dr. Andrew Balfour and Dr. A. G. Bagshawe, the British representatives on the Expert Committee of the League, are to be congratulated upon the comprehensive character of the proposals which were put forward for the consideration of the conference, and which were to a great extent ultimately adopted.

The selection of the new Commission to carry out the Expert Committee's recommendations will afford satisfaction to all workers in tropical medicine. Dr. Lyndhurst Duke, who will direct the labours of the Commission, has been known for many years as an indefatigable worker on trypanosomiasis. Dr. Kleine, who has spent many years in East Africa, is a most devoted student, who first worked out the developmental cycle of *Trypanosoma gambiense* in the tsetse-fly, and by courageously inoculating himself with animal blood containing trypanosomes was able to prove the non-pathogenicity of *T. brucei* for man. The Commission is fortunate to have the coöperation of Mr. C. F. M. Swynnerton who, as an authority on zoology, especially the big game of Africa, has made the study of tsetse prevention his own. The appointments of a botanist and entomologist are necessary in order to make such a comprehensive inquiry complete. It is a matter of considerable satisfaction that this International Commission will work on British territory and will enjoy the facilities provided by Dr. Duke's laboratory at Entebbe. The exact rôle played by the big game in the spread of trypanosomiasis to man offers many points of primary importance which should soon be settled. The whole of this difficult problem is at present in an unsatisfactory state, and so is the part played by the commoner domestic animals. Zoologists, veterinarians, and sanitarians are equally concerned in its solution. Another important point is the exact relationship between the three important pathogenic trypanosomes—*T. gambiense*, *T. rhodesiense*, and *T. brucei*—and the explanation of the degrees of virulence displayed by these organisms in different areas. Especially attention will doubtless be paid to the most practical methods of exterminating the tsetse-fly. Whether entire extermination is feasible is open to question, but much can be accomplished in greatly reducing the numbers of the fly in populated areas, as Mr. Swynnerton has shown.

Much more accurate and carefully controlled work is necessary in order to determine the value of the more recent trypanosomicidal drugs—we may mention especially "Bayer 205" and tryparsamide. Are these drugs more efficacious when given singly or, as some think, is their action more rapid and effective when non-metallic and metallic substances are combined? The combination of antimony tartrate with "Bayer 205" is another possibility which has already suggested itself to workers on these lines. The prophylactic value of trypanosomicidal drugs both in men and in animals requires reinvestigation, for it is obvious that, were any protection against infection made possible, the limitation of the spread of trypanosomiasis in Central Africa would be rendered comparatively simple. The labours of the Commission will be watched over with very great interest by the governments concerned, and its members will have the sympathy of the whole medical profession in their work.

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A CENTRAL PHARMACEUTICAL LABORATORY.

In the course of his presidential address at the annual meeting of the Pharmaceutical Society of Great Britain on May 20th, Mr. F. Pilkington Sargeant stated the decision of the Council to establish a laboratory for the standardisation of the substances which are the subject of the provisions of the Therapeutic Substances Bill. The standardisation of such substances as serums, vaccines, glandular preparations, organic arsenic preparations, cannot, of course, be undertaken by chemical means, and there is a field of work here which at present does not belong either to the province of the doctor, the pure chemist, or the pharmacist, although Mr. Sargeant claimed it for the pharmacist. There is at present no institution where the average pharmacist can receive training in the preparation of such substances. The lines on which the laboratory should be established are to be in the hands of an advisory committee on which the General Medical Council has appointed Sir Nestor Tirard as its representative, the Medical Research Council Dr. H. H. Dale, and the British Medical Association Sir Humphry Rolleston. The value of such a laboratory is apparent. While the medical profession will find it chiefly to reside in the examination and standardisation of therapeutic substances, the pharmacist will value most the possibilities afforded for training and research work. Some such step has long been felt to be essential if the pharmacist is to keep pace with the ever-progressing march of medical science.

Annotations.

"Ne quid nimis."

THE BIRTHDAY HONOURS.

THE list of medical men included in the Birthday Honours issued on June 3rd is headed by Sir John Bland-Sutton, President of the Royal College of Surgeons of England, who has been created a baronet. Sir John Bland-Sutton is so well known as a wise professional leader, a scientific pioneer, and an open-handed benefactor of medicine, that all his colleagues will recognise the rightness of the honour awarded to him. Three medical men have been given civil knighthoods, Mr. James Berry, Dr. Harry E. Dixey, and Dr. John Robertson. The honour to Sir James Berry will give particular pleasure to a wide group of friends, colleagues, and pupils, and also to the far wider circle who are aware of the energy and devotion which he displayed during the war with the Red Cross Unit in Serbia. Sir John Robertson, the medical officer of health for Birmingham, is the well-known professor of public health in the University and a leading authority on such far-reaching questions as housing and milk-supply. Sir Harry Dixey is the chairman of the West Worcestershire Unionist Association and has done much public and political work deserving of reward.

Other honours are to be recorded along various lines of service. Major-General S. G. Moores, late R.A.M.C., becomes a K.C.B., and Surgeon Rear-Admiral Alexander Maclean receives the C.B. Dr. James Crawford Maxwell, colonial secretary of the Gold Coast Colony, becomes K.B.E., while the C.B.E. has been awarded to Dr. E. L. De Chazal, superintendent, Victoria Hospital, Mauritius, and Dr. V. R. Ratten, superintendent, Hobart Hospital, Tasmania. Dr. A. A. Morrison, British delegate on the International Maritime, Sanitary and Quarantine Board of Egypt, has been appointed C.M.G., and the Military O.B.E. has been received by Surgeon-Commander J. S. Dudding, R.N., and Major John Scott, D.S.O., I.M.S. In the Civil Division of the Order of the British Empire Dr. D. M. Cassidy, the medical superintendent of the Lancaster Mental Hospital, Dr. G. P. Bate, who has rendered service to the Home Office under the Factory Acts, and Major A. J. H. Russell, I.M.S., director of public health in Madras, receive the C.B.E. Lieut.-Colonel R. P. Wilson and Lieut.-Colonel C. A. F. Hingston, both of the Indian Medical Service, receive the C.I.E.; the former is officiating Surgeon-General to the Government of Bengal, and the latter is superintendent of the Government Hospital for Women and Children at Madras. The following received the Kaisar-i-Hind Medal of the first class: Dr. Esther G. Bare, of the Clara Swain Methodist Episcopal Mission Hospital at Bareilly, and Dr. Edith L. Young, in charge of the Palwal Mission Dispensary, Gurgaon District, Punjab.

To all of these we tender congratulations on the State recognition of their good work.

OPTICAL TREATMENT OF CONVERGENT SQUINT.

IN a paper read at the last meeting of the Oxford Ophthalmological Congress,[1] Dr. Ernest Thomson submits that there are three distinct categories of people who still require education in the importance of this subject—namely, the parent, the family doctor, and the school-teacher. What is wrong with the family doctor, he asks, who so often minimises the necessity for attending to a squint, tells the parent it will come right in time, and so on? If it is true that such family doctors are many, the answer is that what is wrong is a defect in what ought to be an essential part of their medical training. So far as the deformity is concerned, a squint in a young child will tend to cure itself in the majority of cases with time, but only too probably at the expense of the loss of useful vision in the squinting eye. Perhaps there has been an excuse for the family doctor in the past—namely, that there has been a school of ophthalmologists who have doubted the existence of the condition known as "amblyopia ex anopsia." It is perfectly true that there are cases where a squinting eye has defective vision, not because it squints but for some antecedent cause, such as corneal nebula. In such a case the squint may be more a consequence than a cause of the amblyopia. On the other hand, in cases of recent monocular squint associated with ametropia, it is the general experience of all engaged in eye work that the enforced use of the squinting eye after appropriate optical correction, if undertaken at a sufficiently early age, does prevent it from becoming amblyopic. Dr. Thomson supports this by a reference to the observations of Prof. Arthur Thomson on cave fishes and cave salamanders. The young stages of these cave animals, it seems, sometimes have eyes showing much less retrogression than in the adults. In the case of the human eye it is not suggested that there is any change in structure resulting from disuse. What Dr. Ernest Thomson suggests is that true amblyopia ex anopsia may result from the persistence of blurred vision caused by uncorrected ametropia. The latter tends to pass into the former after a certain lapse of time through true loss of function of the cerebral centres. This implies the necessity of providing young children with spectacles not only as soon as they have developed a squint—this is generally acknowledged—but even before, in cases where there are such considerable degrees of hypermetropia or astigmatism as would render the vision of the child's eyes—one or both of them—blurred.

FATTY ACIDS AND CANCER.

THAT the cells of the lymphocytic order are concerned in resisting the spread of cancerous growths has long been recognised. The accumulation of these cells in the tissues around the invading edge of a malignant growth is so characteristic that it is one of the features usually noted by the pathologist in weighing the evidence for and against malignancy. Up to the present few efforts have been made to modify the spread of cancerous processes by the stimulation of a lymphocytic reaction in the tissues, partly no doubt because until comparatively recently no agent certainly capable of producing such a reaction has been identified. In 1919, Bergel[1] demonstrated that the parenteral injection of certain fatty oils produced such a reaction, and lately Nakahara,[2] working at the Rockefeller Institute, has used this fact as the starting point of an experimental investigation into the effect of the injection of fatty acids upon the growth of implanted cancerous tumours in mice. This observer found that by the use of olive-oil injections he was able to produce a general stimulation of the lymphoid tissues; in his investigations into the inhibition of cancerous growth, however, not the oil but oleic acid and sodium oleate were used. By the injection of small amounts of either of these substances it was found possible to produce profound modifications in the behaviour of implanted tumours. When implantation of the tumours was preceded by the injections the proportion of grafts which took was, in the case of the oleate, 50 per cent. and, in the case of the acid, 40 per cent., as against 90 per cent. and 80 per cent. respectively in the case of untreated controls. Where the injections were made after the implantation of the cancerous growths it was found that subsequent injection either of oleate or acid made little difference to the actual proportion of "takes." Even in this instance, however, the course of growth of the implanted tumours was considerably modified. They increased less rapidly in size than in the controls, and in section after removal the tissues surrounding them were found to show an intense lymphocytic reaction. Experiments with sodium palmitate and stearate showed that both these soaps were practically without effect either in producing a lymphocytic reaction or modifying the course of implantations. Linoleic and linolenic acids were, however, found to be almost as active in both these respects as oleic. Whether, as the above findings suggest, the activity of the fatty acids in promoting a lymphocytic reaction is a function of their degree of desaturation remains to be proved. The author, however, points out that cod-liver oil, which has a very high iodine value, is quite impotent in this respect.

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[1] Trans. Ophthalmological Society, 1924.

[1] Bergel, S.: Berl. Klin. Woch., 1919, lvi., 915.
[2] Nakahara, Waro: Studies from Rockefeller Institute for Medical Research, Reprints lii., 1925, 95.

The therapeutic implications of these observations are obvious. The recent observation of Murray[3] that experimental secondary implants of a tumour will not grow in the presence of a primary is correlated on the clinical side by the fact that removal of a primary growth is only too often followed by the appearance of a crop of secondaries. It is almost a platitude among general practitioners that patients who bear with their cancerous breasts live longer than those who have them removed, though the last state of such patients is such as to render the extra few months of life a doubtful boon. Taking into consideration both experimental and clinical findings, it would seem probable that the seeds of the secondaries are sown long before the removal of the primary tumour. Such removal, however, withdraws the inhibition upon their development. Some agent capable of stifling the seeds before they had a chance to develop would probably greatly improve the after-results of surgical interference in cancerous eventions. The experimental observations recorded above are correlated on the clinical side by the work of Shaw-Mackenzie,[4] who long ago recommended the use of sodium oleate in inoperable cancer cases.

THE CASSEL HOSPITAL FOR FUNCTIONAL NERVOUS DISORDERS.

ONE result of the striking alteration in recent years of the attitude of the public towards minor forms of mental aberration is a discrepancy between the supply of competent medical care and adequate institutional accommodation on the one hand and the number of patients willing and anxious to submit their condition to mental hospital routine on the other. While the prejudice against the "mental hospital" proper is slowly but surely disappearing, those newly established institutions which deal solely with the mild case are always full. The waiting list of the Cassel Hospital is of such a length as to block admissions for periods of from six weeks to three months. In some cases the mental state is not materially affected by delay in treatment; in others there is some deterioration which should at all costs be avoided, while in all there is detriment to the national health and efficiency, since many of these patients might be doing useful work if their psychological difficulty were adjusted. One way of reducing the discrepancy is to ensure such accurate diagnosis that beds which are especially equipped for the functional nerve case shall not be occupied by sufferers who do not come into that category. To assist in this direction Dr. T. A. Ross, the medical director of the Cassel Hospital, in his third annual report, has analysed the cases of organic disease admitted during the year with special reference to the differential diagnosis. While the general practitioner cannot be expected to recognise the morbid symptoms of every disease he should be competent to ascertain whether the signs presented by the various organs are those of health or not, and a really reliable sifting of cases by their doctors would save much time and money in specialist institutions. In distinguishing organic disease of the nervous system Dr. Ross places reliance on the four cardinal groups: pupillary changes, disordered reflexes, the presence of trophic lesions, and bladder trouble. He proposes to deal with some similar problem of diagnosis in each subsequent report and his special experience should be of much value in this direction. Of the 144 patients considered in this report 98 belonged to the psychoneurotic group, and of these 62 are recorded as well or much improved, a figure on which the management are to be congratulated. As in previous issues, the patients are only reported on when at least one year of after-history is available, so that the present pamphlet deals with those who were discharged before December, 1923. There is also a table showing the late results in cases discharged from the hospital during the earlier years; the majority of these are continuing well. The patients are classed in broad diagnostic groups: psycho-neuroses, drug addictions, psychoses, and organic diseases, and there is a courageous discussion of those who failed to improve and the reasons for this failure. The functional nerve case is perhaps the most difficult of all those problems which confront the modern physician; with every year it seems to multiply in variety and increase in complexity It is only by the patient accumulation of observations and statistics that the investigators can hope to see the condition adequately pigeon-holed in the near future. These observations must essentially be made in smaller institutions where every case can be weighed individually; while much excellent curative work is done in the larger mental hospitals it is not possible for the medical superintendent of several hundreds of patients, psychotic and functional, incurable and temporary, to conduct an adequate research into his minor cases. It is to the smaller specialised institutions such as the Cassel Hospital that we look for pioneer work in the exploration of this vital national problem. Dr. Ross and his assistants are well aware of the opportunity which they have and are competent to use it.

MEDICAL SERVICES AT THE WEMBLEY EXHIBITION.

WHEN the British Empire Exhibition was first opened in 1924 we gave a full account[1] of the elaborate medical and sanitary services which had been provided, and commented on the opportunity which was there offered to the public of seeing how its health and well-being were cared for—in place where it might least expect such an adjunct to safety and convenience. The health problem, as we pointed out, was not alone that of large transitory congregations of visitors, but also concerned a very considerable permanent population in the park largely unused to Western ideas of sanitation. It may be placed to the credit of the Exhibition authorities that the medical equipment for 1924 was slightly in excess of the public's requirements—surely an unusual record for a great undertaking of this nature. This year the medical services are organised on similar lines to those of last year, modified only by the abolition of one ambulance station and three first-aid cabinets, which experience showed were superfluous.

The medical staff at the Exhibition consists of the following officers: General Sir W. W. O. Beveridge, Director of Medical Services; Colonel Douglas Lawson, senior medical officer; and Dr. C. E. Goddard, medical officer of health. We are indebted to the director and the senior medical officer for the details of the medical services this year. The ambulance and first-aid stations now in use are: (1) The main ambulance station situated behind Australia near the south-west entrance of the Exhibition. (2) A small ambulance station fitted with men's and women's first-aid rooms, situated in the north of the grounds and near the amusements park. (3) Seven first-aid cabinets scattered in suitable positions about the grounds and the palaces. (4) An ambulance station in the stadium.

The headquarters of the Order of St. John of Jerusalem and the British Red Cross Society are situated in a large hut which has been placed at their disposal by Messrs. Main and Co. near the Civic Hall and the main ambulance station. The detachments coming on duty, usually for a week, are drawn from all over the country, and the societies take turn month and month about to carry out first-aid duties. During big days the detachments doing duty are supplemented by extra V.A.D. nurses and orderlies. Each member receives a small honorarium to help to pay out-of-pocket expenses. The two societies have made themselves responsible for the supply of drugs, dressings, and appliances.

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[3] Murray, J.: Eighth Sci. Rep. Imp. Canc. Res. Fund, 1923.

[4] Shaw-Mackenzie, J.: Internat. Cong. Med., London, 1913 ([illegible] Sect.)

[1] THE LANCET, 1924, i., 1127.

All the ambulance stations and the first-aid cabinets are in telephonic communication with the main station, from which a motor ambulance can be obtained to remove a case to the main station where a medical officer is always on duty. The main station is fitted with a men's ward and a women's ward each containing six beds and a special ward containing one bed, also two dressing rooms and a dispensary. The permanent staff at this station comprises a senior medical officer, an assistant medical officer, two dispensers, and two trained nurses, one of whom acts as matron. This staff is supplemented by two V.A.D. nurses and two orderlies of the society doing duty for the month. The main ambulance station deals with accidents and illnesses of all kinds, and any found to require hospital treatment are transferred to Willesden General Hospital or other suitable hospitals. Some cases are transferred to nursing homes or to the patient's own home. No cases are kept overnight, but visitors with such things as gastric catarrh, overstrain, sprains, or contusions may be detained for some hours. These and other cases are frequently assisted on their way home by motor ambulance to railway or bus stations. The other ambulance stations and first-aid cabinets are all staffed by nurses and orderlies of the societies. There are two motor ambulances and a small four-seater touring car, all supplied by the societies, which are kept in a garage adjoining the main ambulance station. One ambulance is always in the Exhibition, whilst the other may be used to convey patients to their homes. Patients, if able, pay for the use of the ambulance. Others pay part or travel free according to their financial position.

Dr. Goddard is responsible for the sanitation of the Exhibition. Daily inspections of the buildings, restaurants, conveniences, grounds, and native quarters are made by three sanitary inspectors, two men and one woman, who report to the local urban authority.

THE ACTION OF EFFERVESCENT BATHS.

It is well known that many waters, resorted to both for drinking and bathing, contain in the fresh state a variety of gases, although as a rule their therapeutic effect is not attributed to their gaseous contents. At Buxton, for example, besides other gases, the waters contain large volumes of nitrogen and carbonic acid. These gases adhere to the body of the bather, and they are freely inhaled. What is their effect? It must be confessed that the modus operandi of what may be called semi-gaseous and effervescent baths, whether natural or artificial, is still far from being understood. They have, however, certain noteworthy features. Thus in these baths, given below blood heat, not one but two thermal actions take place upon the surface of the body, due respectively to the relatively cool water and the relatively warm gases. Again, a remarkably consistent clinical experience has shown that effervescent baths at suitable temperatures affect the frequency of the pulse, the cutaneous circulation, and the arterial blood pressure, these immediate effects being followed by others more remote. Recent work at Spa and St. Moritz [1] have helped to define the indications for this form of balneotherapy. Dr. Hediger suggests that the effervescent bath, properly given in cases of myocardial weakness, acts by training the heart and gradually increasing the force of its contractions. At the same time it slows the cardiac rhythm, a result favourable to the nutrition of the myocardium. In his view it is a form of training accompanied by slowing of the pulse. All these and other observers agree that a definite sedative effect is also produced by the bath, and a reduction of peripheral resistance, by the opening up of the cutaneous circulation. According to Dr. Hediger, the results point to a specific action of carbonic acid gas upon the vasomotor nervous system.

We have received some interesting and suggestive observations from Dr. Karl Barth, who for nearly 20 years has studied the action of natural carbonic acid baths at Kislowodsk in a valley of the Caucasus, and afterwards at Nauheim. An old saying runs that the flowers at Kislowodsk are without scent, the birds without song, and the people without souls. Dr. Barth finds some truth in this tradition, and at Nauheim also, and especially notes that many persons, who feel quite well on the higher slopes, are tired and depressed near the springs. Sensitive, anæmic, and debilitated subjects, brain workers and women, are generally affected by the atmosphere near these waters. In his experience a certain number of the cardiac cases referred to both these spas derive most benefit from the air alone, which he regards as the first grade of a "carbonic acid treatment." With reference to the carbonic acid content of the atmosphere, wider differences exist than is generally supposed. The monthly weather reports showed many years ago that the proportion of this gas in the air of the London streets was sometimes three or four times as high on a working day as on a bank holiday. Lundegårdh has recently stated [2] that green plants are stimulated to increased growth by an increase of carbonic acid up to a point, but that a proportion of about 1 per cent. becomes in many cases inhibitory. Following the analysis of gases contained in waters, made by Prof. Schmidt, of Dorpat, Barth suggests that possibly a mixture of other gases, especially of nitrous oxide, in minute and continuous doses, may be concerned with the effects of these local climates and baths. In any case, he believes that the cure of cardiac cases in these localities is a combined one, and that effervescent baths alter or increase a special action of the atmosphere. In modern times gases have been used in deadly doses. May not continuous dosage with minute quantities of various gases have a therapeutic effect? From the scientific standpoint the action of effervescent baths ought, according to Dr. Barth, to be regarded as a graduated stimulation of organs or tissues, producing certain reactions. Even minute stimuli, below the threshold value, may affect the sum of the tensions in living protoplasm, and so increase the store of potential energy in the body. The stimulus of the effervescent bath especially affects the circulatory apparatus and its potential energy. Other organs and other forms of disease—e.g., tuberculosis—are adversely affected by the same stimuli.

All the authorities above quoted agree that myocardial weakness which has resisted other forms of treatment may respond favourably to effervescent baths. The first effect may be a diminished vigour, and only a heart with reserve power ought to be treated in this way. The result of treatment is usually manifested after an interval of months. The effervescent bath, according to these views, places a keyboard of stimuli at the disposal of the practitioner. Laboratory proofs will, no doubt, in time substantiate the clinical findings. In the meantime, it is to be recognised that cardio-vascular baths, like all other forms of physical treatment, should be adjusted to each individual case rather than dosed. Definite indications for such media cannot be attached to diseases or even to functional disturbance, but only to individuals and by the study of individual reactions. It is obvious that more extensive clinical research and analysis of cases submitted to treatment of this kind at the health resorts, particularly at the spa hospitals, with graphic records during and after treatment, are much to be desired. Thousands of cardiac invalids resort to spas for relief of their symptoms, often on their own initiative, or because friends have derived benefit, and no branch of spa treatment is more deserving of attentive study. It would appear that the addition of salt in the water hastens the vaso-dilator effect. The action of carbonic acid gas and of other gases in baths upon the circulatory system is still an unsolved and interesting problem. It is not yet clear whether natural and artificial effervescent baths act in the same manner.

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[1] Archives of Medical Hydrology: No. 1, May, 1922: R. Wybauw: The Treatment of Circulatory Trouble by Natural Effervescent Baths, No. 5, May, 1924: Em. Guilleaume: Natural Effervescent Baths in the Treatment of Angina Pectoris, No. 3, June, 1923; Stephan Hediger: Recent Researches on Natural Carbonic Acid Baths.

[2] Der Kreislauf der Kohlensäure in der Natur, 1924.

THE HUMAN MACHINE.

DEPRESSION is to-day the ruling factor in British industry. The remedy is held to lie in lessening costs of production, to which wages contribute the most important item. Workers need wages to maintain their well-being, and, in proportion as working hours are spent under unfavourable conditions, they need more wages to enable them outside working hours to re-establish the equilibrium of health. A question arises as to whether improvement in working conditions, carried out for the personnel as a whole, would not maintain well-being more surely and more economically than leaving it to each individual worker. Moreover, maximum production is contingent upon maximum fitness; hence, whatever conduces to fitness benefits the employer no less than the worker. The whole question turns on the importance of the human factor in relation to production. Study of the human factor is the function of the Industrial Fatigue Research Board whose fifth annual report [1] has just been published. Thirty reports dealing with special investigations have already been published by the Board and definite laws governing human activity are emerging. Nevertheless, we note with regret that British industries are reported as failing to avail themselves of the new knowledge, even though it offers a sure way of mitigating trade depression and is being adopted in other countries.

The rest of the Board's activities is far cast and includes problems of wide industrial importance, such as hours of work, accident causation, design of machinery, ventilation, and speed of learning; specific problems, such as sickness in cotton-weaving, weight-lifting, telegraphists' cramp, illumination for printing, atmospheric conditions in mines, and employment of women as pottery placers; and laboratory research into the laws of muscular exercise, weight carrying, physical fitness, vocational selection, accuracy of movement, repetitive work, and muscular skill. The value of these investigations is hard to over-estimate; much is carried out by scientific and professional men as a free gift of knowledge for a national end. Throughout its work the Board interlocks with the activities of the National Institute of Industrial Psychology which concerns itself with specific problems for separate firms. Solution of such problems brings immediate financial return to the firms and cannot therefore be undertaken from public funds, even though based on fundamental principles elucidated with their help. Practical application may throw new light on the general problem. The Institute is an organisation in full working order prepared to translate for the benefit of individual employers the advances which have been made in understanding that internal combustion machine—the human body.

The report contains several interesting personal contributions from investigators. Perhaps the first, by Mr. S. Wyatt, will attract most attention. He shows by diagram how the productivity of beginners, even at the simplest processes, increases week by week, how it varies with different types of work and of worker; for the best workers the rate of output increases rapidly and attains a high level, for the worst the rate of increase is much slower and output never attains a high level. Slow starters should at an early stage be transferred to some process for which they are better fitted and be replaced by quick starters. Miss May Smith exhibits how mental states are reflected by exceptional work curves; the nervous and neurasthenic have an exceptional mental make-up and react accordingly. They have also much sick leave, headaches, and irritability. The work curve as a method of diagnosis may be of great value. The question is discussed by Mr. E. Farmer as to whether that tendency or predisposition to sustain accidents which is now accepted to exist can be detected beforehand; he optimistically concludes there is already evidence that this can be done by properly devised tests. The importance of such a line of research is clear. Dr. H. M. Vernon discusses the significance of output as a measure of efficiency; he considers it of great value and concludes that to-day there is practically no overstrain in industry. Mr. H. C. Weston puts in a plea for giving weight to personal subjective feelings, which may go far to check deductions drawn from other sources of information. An excellent and well put together article by Miss E. M. Newbold deals with the long vexed question of how to cope with industrial sickness statistics. The author presents the wellnigh insuperable obstacles in the way of collecting comparable data, and the pitfalls awaiting the enthusiastic tyro. He who takes this way has truly a rough road to ride.

REAPPEARANCE OF GERLIER'S DISEASE.

IN the *Schweizerische medizinische Wochenschrift* for May 7th Dr. Karl Rehsteiner, of Zürich, describes a small epidemic of Gerlier's disease which he observed in the autumn of 1924. As many as seven of the eight persons living in two houses showed the characteristic signs of this disease which, according to Dr. Rehsteiner, has not been noticed in Europe since 1900. Its history is of some interest. In 1887 Gerlier, of Switzerland, described a condition which he had first observed in the summers of 1885 and 1886, although he had been in practice in the locality for 20 years. He called it *vertige paralysant*, and the triad which he considered the most characteristic of the manifestations of this disease were: (1) pareses of certain muscles; (2) giddiness and disturbances of vision; and (3) pain in the nape of the neck and back. This disease has been known since 1888 in Northern Japan as *kubisagari* (hanging of the head), for in some cases the muscles of the nape of the neck are so weak that the chin rests on the chest. The levator palpebræ superioris is nearly always involved, and the resultant ptosis is so complete that the patient has to lift an eyelid with a finger in order to see. The extensors of the arms and legs may also be temporarily paralysed, and the combination of paralysis of the extensors of the legs with giddiness is apt to suggest drunkenness. During an attack the patient complains of misty vision and sometimes of diplopia. It is characteristic of the disease that an attack usually lasts only a few minutes, and it is this transitory character which distinguishes it from certain other diseases, such as myasthenia pseudoparalytica and lethargic encephalitis. The disease begins, as a rule, in the summer, the attacks becoming more frequent and severe until half a score to a score occur every day and greatly interfere with the patient's work. They cease with the beginning of colder weather, and have never been known to be fatal. Indeed, in the intervals between the attacks the patient feels perfectly well. Investigations conducted in Japan suggest that there is a certain connexion between working in a stable and the development of this disease, and it has been observed that transmission of the disease from one person to another does not occur (except in the case of mothers suckling their infants), as persons who do not live in stables, but who consort intimately with stablemen suffering from the disease, do not contract it. In 1914 a Frenchman, Couchoud, working in Japan, cultivated a small Gram-negative coccus from the cerebro-spinal fluid and milk of patients, and the subcutaneous injection of cultures of this coccus into cats caused paralyses similar to those observed in man, the attacks of paralysis ceasing after a few days, and the cats recovering completely. Now that Gerlier's disease has reappeared in Europe, and attention has been drawn to its most characteristic features, further research will doubtless be undertaken, and new light thrown on a condition which has probably often been overlooked or mistaken for hysteria—that cloak under which so many morbid conditions have been hidden in the past.

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[1] Fifth Annual Report of the Industrial Fatigue Research Board. H.M. Stationery Office. 1925. Pp. 76. 1s. 9d.

CANCER AND THE NERVOUS SYSTEM.

In discussing recently in these columns (May 2nd) the anatomical distribution of occupational cancers, the suggestion was made that the factor of innervation might account for the predisposition of definite anatomical sites in the incidence of different types of occupational cancers. From an article by Dr. J. Thomas in the *Vie Médicale* of Feb. 13th, it appears that the relation of the nervous system to the ætiology of cancer has been the subject of a recent monograph entitled Précancer, by Prof. C. Stajano, of Montevideo. The article of Dr. Thomas from which we quote is a review of this monograph. Prof. Stajano holds that a peripheral traumatism must necessarily react through the peripheral nerve-endings on the cells of the central nervous system, and it is this latter change which is reflected peripherally and manifests itself in the traumatised tissue. Thus, according to Stajano, the epithelial dystrophy of lingual leukoplakia establishes itself as a response of a trophic nerve-centre, the functions of which have been disturbed by an irritating agent, such as a carious tooth. In that sense every lingual leukoplakia has a nervous origin, whether it is produced by a peripheral traumatism or by the effect of such a disease as syphilis on the nerve-cells. Stajano further holds that cancer affects particularly those sites or organs which are most highly innervated. He points out that cancer arises much less frequently on a duodenal ulcer than on a gastric ulcer, and relates this fact to differences in the degree of innervation. These interesting observations are in accord with the scanty data existing in the literature concerning the relation of the nervous system to cancer. In 1907 Sir Lenthal Cheatle[1] described in two cases of cutaneous cancer inflammatory changes in the posterior root ganglia corresponding to the area of affected skin. There are also on record two cases of cancer in man developing with extraordinary rapidity as a result of a local traumatism. In Bang's[2] case an epithelioma developed a fortnight after a drop of hot tar had fallen on the skin just within the nostril. In Story's case an epithelioma had developed within four months after the conjunctiva had been traumatised by a splash of crude carbolic. Both these regions are, of course, distinguished by being sensitive to nervous stimulation. As a result of his studies Prof. Stajano holds that—

> "the part played by syphilis and by tuberculosis in the origin of precancerous dystrophies consists in the fibrotic and destructive action on the nervous system which is common to them. . . . Traumatism in general, and chronic ulceration in particular, cease to be local accidents, and must be considered as far-reaching lesions passing beyond the bounds of the organs or regions and influencing their whole regional nervous system. . . . Carcinoma becomes a syndrome of a dystrophic nature closely related to a preceding state—the precancerous lesion—the ætiology and pathogenesis of which have their foundation in the study of the ætiology and pathogenesis of the original nervous disturbance."

Prof. Stajano's conclusions are interesting but highly speculative.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CXXV.

THE TREATMENT OF DEMENTIA PRÆCOX.

2. The Management of a Case.

Having gleaned all that he can from the parents and friends, the doctor is prepared to examine the patient himself.

Early Cases.

It may happen that sensible parents or relatives bring the patient to the notice of the physician before evident mental disturbances have arisen. The patient may be found to be mildly excited with a certain degree of incoherence of thought and a general childish demeanour and reaction, or the picture may be one of emotional apathy and resistiveness with reticence. In the former case no good can be done by any attempt at psychological investigation; the treatment must be carried out on the general lines indicated below, modified to suit the requirements. Where there are depression and apathy, however, much can be done by a painstaking effort to obtain the confidence of the patient. Very often it will be found that the apathy is more apparent than real and that the reticence is deliberately adopted rather than indicative of lack of thought process. A dramatic change in the situation can be brought about in many such instances by patience, goodwill, and a real heartfelt attempt to understand the difficulties which the patient is experiencing. An acquaintance with human nature and a sympathetic understanding are worth more in dealing with such a situation than all the scientific technique of the schools. The physician must guard against showing any surprise or emotional revolt at any of the facts which may be confided to him. Very often it transpires that the girl or boy is suffering from a serious loss of self-esteem due to some unconventional behaviour. With this feeling of inferiority there goes a sense of estrangement, of being cut off from social contact, and the attitude of the relatives is often interpreted in this light. It is surprising how completely the whole outlook of the patient may change when once he or she discovers that this secret and carefully hidden difficulty can be freely and naturally discussed with the doctor. Without betraying the confidence of the patient, the physician can often effect some readjustment of the family life or of the environmental situation and so relieve the stress of circumstance. One interview may not be, and often is not, enough to clear up the matter. It may be necessary to stop any active work, even to institute a definite sick routine for a month or six weeks. According to the response to treatment manifested greater latitude may then be allowed and the patient may be sent away for a change before taking up his life again under such circumstances as are indicated. It is unwise in these acute adolescent disturbances to permit of any systematic psychological investigation; analysis in the Freudian sense has, in the experience of most psychiatrists, been productive of more harm than good and it is certainly unnecessary.

It is desirable to relieve the acuity of perceptional life by the administration of bromides, and the following prescription may be used for a period of six months or even longer with advantage:—

℞	Ammon. Brom. ..	..	gr. x.
	Liq. Arsenic. ..	..	♏ ii.
	Sp. Ammon. Arom.	..	♏ v.
	Aq. Chlorof. ..	..	ad ℥j.

Sig.: ℥j. t.d.s., p.c.

Although there is no definite knowledge in regard to specific endocrine disturbances, yet any indication of failure or of hyperactivity of one or other of the organs of internal secretion should be noted and appropriate treatment adopted. The empirical use of compound glandular extracts is often of value; the "Elixir polyglandin," in drachm doses three times a day, may be given in this way over a period of months. Iron and strychnine should be used with care in the early stages of the treatment, but are useful adjuncts during the convalescence.

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[1] Brit. Med. Jour., 1907, ii., 140.

[2] Trans. Acad. Med. in Irel., 1885, iii., 322

More Advanced Cases.

Where there is evident mental disturbance of a pathological nature there is no doubt of the condition, and the line of treatment to be adopted will depend upon the severity and nature of the disturbance of conduct and upon the circumstances of the relatives. The age of the patient has also a bearing on the case, because much can be done to manage the younger patient at home, whereas, for the safety of everyone concerned, the older boy or girl may have to be placed under certificate and treated in an institution. If it is decided to treat the patient away from home it is far wiser to place him in a recognised mental institution. The ordinary general nursing home does not provide the right atmosphere and much valuable time may be lost before the case is brought under the care of those who have a proper understanding of the condition. The practitioner must not forget that it is illegal to treat a certifiable patient in any nursing home other than one of those licensed by the Board of Control.

Home Treatment.

If the case is to be treated at home it is always advisable to insist on a specially trained nurse; the relatives are not to be relied on and the general nurse does not appreciate the points against which to guard. The difficulties generally encountered are impulsive behaviour or suicidal tendencies, excitement and noise, stupor and refusal of food. The treatment should be carried out in a well-ventilated room on the ground floor, having easy access to a garden, which preferably should not be overlooked, so that the patient can take exercise when desirable and so that his bed can be placed in the fresh air when the weather is suitable. It is wise to aim at keeping him in bed for at least a month or six weeks; the causal factor is exhaustion, and all expenditure of energy should be cut down to a minimum. Where there is marked restlessness with tendencies to destructiveness it is advisable to put a mattress on the floor and nurse the patient without a bedstead at all. Where he is inclined to tear up sheets and to strip himself, as is so frequently the case, he may be dressed in a strong and warmly-lined combination suiting of canvas or some untearable material and so protected from the effects of exposure. Where there is excitement with motor restlessness or depression with suicidal tendencies the room should be cleared of all breakable objects which might form sharp-edged instruments for self-mutilation. He should be kept on sloppy foods which do not demand the use of a knife and fork; a spoon is a far less dangerous implement in the hands of an impulsive patient. Emotional instability with marked depression is a sign of considerable gravity because of the liability to impulsive suicide. In such a case continuous observation is absolutely necessary and for this two or even three nurses may be required. The noisy case must be nursed in an isolated house or he will be a nuisance to neighbours. It is not correct treatment to restrain a patient mechanically or to keep him quiet by the use of strong sedatives.

Diet and Drugs.

The diet should be plentiful and contain an excess of fat in the form of butter and cream. Care must be taken to see that a sufficiency of fresh fruit and other vitamin-containing substances is included. Where the patient refuses food or is stuporous a competent mental nurse is of great assistance, but resort should be made to tube-feeding if there is any suspicion that the patient is not getting an adequate amount of nourishment; if matters are allowed to drag on, a point is reached when he seems incapable of digesting or assimilating and serious physical consequences may ensue. Feeds should be given three times in the day and should not fall below a diurnal minimum of four pints of milk, three eggs, three ounces of cream, four ounces of sugar, and the juice of an orange or lemon or whatever fruit may be available. The milk may be given in the form of custards or one of the prepared foods. A vegetable soup makes a good variant in the dietary. Any medicines, such as aperients, may be dissolved in the feed and so given at the same time. Careful attention should be paid to the bowels and to the state of the mouth, which may become very dirty. Sedatives may be found necessary from time to time, especially where there are insomnia and excitement. The administration of paraldehyde in doses of from two to four drachms, given every six hours or night and morning, may be continued for some time without any harm to the patient. The use of the more toxic sedatives over any prolonged period is to be deprecated. Sulphonal, in doses of from 5 to 15 gr. once or twice daily, soneryl, which may be given up to 9 gr. throughout the day, and luminal, in 4 gr. doses at night, have all been found useful. When sulphonal is being administered the appearance of dark smoky urine, due to the elimination of hæmatoporphyrin, indicates that the drug is accumulating and exercising a deleterious toxic effect.

During the patient's rest in bed, massage and hydrotherapy will materially assist in keeping up the physical condition and in maintaining a healthy tone in the skin and muscular system. Prolonged hot baths, at a few degrees above blood-heat for five or six hours at a time, are sometimes of great benefit in controlling restlessness. If the patient should develop acute phases of excitement the hypodermic administration of a combination of morphine gr. ¼ and hyoscine gr. 1/100–1/50 will be found efficacious. Objections to the use of hyoscine, based upon complaints from patients of "feeling held in a vice," &c., should not be considered too seriously; in these conditions of excitement it is a valuable and useful drug.

The treatment will take time. Whereas the course of physical illnesses is usually measured in days or at most weeks, that of the mental illness is measured in months and possibly years, though it is unusual for an acute mental disturbance to persist longer than a year and a half. The relatives must be prepared for at least six months' continuous treatment, and they must be accustomed to the idea that no sign of progress may appear for many weeks. A change of phase is often indicative of response to treatment; the excited patient may become depressed, stupor may replace motor restlessness, confusion may alternate with clear periods, but eventually the more acute phenomena subside, the hallucinosis becomes less vivid and disturbing to the patient, impulses are less frequent and more easily controlled, and he shows a tendency to occupy himself more consistently and to take a normal interest in affairs around him. Care must be taken not to let him re-enter life too quickly, and he should be kept under supervision and prevented from taking up any social responsibilities for at least two months after all definitely morbid symptoms have disappeared.

It will be seen that the treatment of the mental patient at home is not to be lightly undertaken, and unless conditions are very favourable it is usually better for him to be dealt with in an institution. The practitioner must exercise his discretion and judge each case on its merits, but no time should be lost in getting the patient under proper control when the symptoms are as gross as those described above.

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Special Articles.

THE MILK-SUPPLY AND ITS IMPROVEMENT.

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II.*—INADEQUACY OF THE PRESENT LEGAL POWERS DEALING WITH MILK.

IT is of importance to determine whether the present unsatisfactory condition of the milk-supply is due to insufficient legal control, to the ineptitude of local authorities and failure to use their existing powers, or to factors uninfluenced by statutory regulations and enactments. There exist upon the statute book and in regulations made under different laws a considerable quantity of legislation.

The Present Statutory Powers.

The latest Act is the Milk and Dairies (Amendment) Act, 1922. Its most noticeable feature is that while it added materially to the control exercisable over purveyors of milk it did nothing to tighten the control over milk producers. The official reason for this singular omission was that the existing legal enactments were adequate for this purpose and it was merely a question of their enforcement. To quote the circular of the Ministry :—

> The Minister desires to take this opportunity of drawing the attention of sanitary authorities to the very wide powers which they already possess for the sanitary control of dairies and cowsheds under the existing Dairies, Cowsheds, and Milkshops Orders of 1885, 1886, and 1899, and the detailed regulations which have been made by most authorities under the first of these Orders. It seems to the Minister that by the careful and systematic exercise of existing powers, together with the additional powers conferred under the new Act, local authorities should be able to take all necessary steps for the protection of the milk-supply from contamination.

It is desirable to examine with some care the reliability of this official optimism.

The efficiency of the present powers involves two separate propositions. Is the enforcement of the powers entrusted to authorities who are likely to carry them out? If it be granted that there exists the utmost willingness to operate these powers, are the legal enactments so framed that effective control is possible?

As regards the first proposition it is recognised, by those in a position to pass judgment, that the heaviest contamination and that likely to be most detrimental is at the place of production of the milk, so for practical purposes we have to consider in the main the control over clean and pure milk *production*.

These powers are exercised by the local sanitary authorities and, since the vast bulk of milk is produced in the rural areas, almost entirely by the rural sanitary authorities. We are all aware that these powers, for the most part, are administered in a very lukewarm fashion and for three obvious reasons.

(*a*) These councils are composed almost entirely of farmers or of persons directly in business relationship to farmers and milk producers. By nature and training they find it difficult to realise that conditions which they have been accustomed to all their lives may be profoundly unsatisfactory, and it is asking a lot of human nature to expect them to be zealous in public health reforms which may intimately affect their pockets.

(*b*) The officers of the local authorities who have to carry out the milk regulations are appointed by these rural district councils, and zeal in milk reform is frequently no recommendation to advancement in position or salary. Rarely or never are there enough inspectors to make it possible for them to carry out their duties efficiently under the Milk Orders and Regulations.

In the county of Somerset there are between 4700 and 5000 milk producers and the work of inspection is in the hands of 19 inspectors, all but one of whom are the sanitary inspectors of their districts, with an average of 991,700 acres and with other duties more than sufficient to keep them fully occupied.

(*c*) The vast bulk of the milk produced in rural districts is not consumed in them, but is sent to urban areas. The clean and the dirty milk fetches the same price, and efficient control adds nothing to the health or economic position of the rural areas.

All cognizant of these facts know that these factors affect materially the degree and quality of the supervision exercised over milk production.

The second question is, assuming efficient administration, can the existing legal powers ensure clean pure milk. Practically all the essential powers of control are contained in the Dairies, Cowsheds and Milkshops Order of 1885 and the Regulations made under them, the 1899 Order, the Milk and Dairies (Amendment) Act, 1922, and a few powers in regard to milk scattered through different Public Health Acts. It is impracticable in the space available to consider these in detail and only their general effect can be discussed.

Inadequacy of Existing Powers.

As regards the conveyance, with milk as the vehicle, of specific infectious diseases such as tuberculosis, streptococcal sore throats, diphtheria, typhoid fever, &c., *it is notorious that existing powers are inadequate*, and this is true whether the disease is spread from an infective animal or from a human case or carrier. Almost all the sections have attached to them "safeguards" to protect the milk industry which largely nullify the scanty powers which they provide. Two examples may be given.

Section 9 of the 1905 Order makes it unlawful for persons who deal in or handle milk to take any part in the business if they suffer from a dangerous infectious disorder or have been in contact with a person so suffering. It only operates when there is definite knowledge on the part of the milk producer or trader, and does not affect the cases where the diagnosis is still in doubt. The harm is frequently done by the time the disease is labelled a "dangerous infectious disorder," and only last August in Somerset, in an outbreak of eight cases of enteric fever, the father of the original sufferer continued to milk his cows and handle the milk right up to the day he took to his bed and was found himself to be suffering from the same disease. The child was ill in his house for several weeks, but no definite diagnosis was made until after the father was ill, so there was no offence under Section 9. There are no powers requiring notification of illness to the local authority from premises where milk is handled.

There are no adequate powers as regards milk from tuberculous animals. Section 5 of the 1922 Act makes it an offence to sell milk from a cow suffering from tuberculosis of the udder, but with the safeguard that the local authority has to prove that the owner "knew or could by the exercise of ordinary care have ascertained that the cow was suffering from that disease." The diagnosis of udder tuberculosis is notoriously difficult even to the skilled veterinary surgeon, while there appears to be nothing to prevent the cow keeper selling the cow, without disclosure of the facts, to another milk producer.

The local authorities might do something by the appointment of veterinary inspectors to inspect systematically cows and cowsheds. The appointment would have to be made by the individual rural and urban authorities. It is doubtful if county councils could make appointments for this purpose. The only county council appointment of this kind, of which I am aware, is in Scotland, and in the county of Lanark, by agreement with the local authorities, a whole-time

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[*] Part I. appeared in THE LANCET of May 23rd and 30th, and Part III. will appear in a subsequent issue.

veterinary inspector was appointed in 1910 and this work has been continued since with the aid of a qualified veterinary assistant. The following figures from this county, for which I am indebted to Dr. J. H. Patterson (M.O.H.), are of considerable interest.

Year.	Number of cows inspected.	Numbers with udder tuberculosis.	Percentage with udder tuberculosis.
1910–11	31,003	37	0·119
1911–12	32,325	36	0·111
1912–13	31,938	36	0·112
1913–14	32,743	41	0·122
*1920	29,310	19	0·061
1921	33,786	31	0·091
1922	28,727	28	0·097
1923	28,174	30	0·106

* No inspections during the intervening war years.

While it is probable that some cases of udder tuberculosis are never seen by the inspectors, the percentage detected is only about one-tenth of the proportion (1 per cent.) which competent veterinary authorities give as the prevalence of udder tuberculosis in milking herds. This fact suggests that the systematic inspection in Lanark is responsible for a very marked decrease in the prevalence of udder tuberculosis in this county, and is a striking example of the value of systematic veterinary inspection.

As regards the production of clean milk, apart from possibilities of contamination with recognised pathogenic bacilli, the legal powers are even less satisfactory. They may be considered under equipment and under methods.

As regards equipment at the farm, while it is perfectly true that methods are far more important than equipment, and that the trained person can produce high quality milk upon premises exceedingly poorly equipped, it remains true that equipment is an important adjunct and greatly facilitates the application of sound methods. While the regulations are more comprehensive as regards equipment than when dealing with methods they are very unsatisfactory. No recent regulations have been made, and those in force show an almost perverse and wilful looseness of phraseology which makes it difficult to take legal action. There are no definite regulations as to an impervious floor in the cowshed (an essential), and the requirements as to light, ventilation, and water-supply are of the vaguest. The cowsheds have to be "sufficiently" lighted, "sufficiently" ventilated with a "sufficient" number of openings, the water-supply has to be "suitable and sufficient for all such purposes as may from time to time be reasonably necessary." The definition of that blessed word "sufficient," it has to be remembered, is in the hands of the rural district council, usually composed of, or controlled by, the milk-producing section of the community.

Defective Powers of Control of Milk Production.

When we come to methods of milk production it is rather farcical to suggest that there are adequate powers of control. The requirements for clean milk are in their essentials clean cows, clean milkers, clean sheds, clean milk vessels, and satisfactory arrangements to cool the milk. There are, for example, no wers to require (*a*) the approaches to the cowshed be kept clean and free from manure to prevent uling of the animals as they go to their sheds. (*b*) The lders of the cows to be washed or even wiped before [illegible], unless the producer sells milk by retail. (*c*) Hands to be washed (unless the producer retails the milk), or even facilities for washing the hands to be provided. (*d*) The milkers to wear overalls. (*e*) A water-supply to be provided adjacent to the cowsheds for washing the hands or for cleaning down the floor of the cowshed. (*f*) The milk to be cooled after milking.

No powers are available for collecting samples of milk at the place of production for bacteriological examination. About the only definite powers are in regard to the cleanliness of vessels, and these are couched in the typical loose phraseology such as that every milk vessel is to be thoroughly cleansed with steam or clean boiling water "as often as may be necessary."

The want of legal sanctions will be better appreciated when it is realised that the inspector may visit a cowshed at milking time and find therein manure-plastered cows with dirty udders being milked by a man in his ordinary clothes in which he has just come from muck-carting. The milker's hands may be unwashed and, if he is an advocate of wet milking, he can start his job by dipping his hands in the first few pulls of milk; he can sit on a filthy milking-stool from which he refouls his hands whenever he shifts to milk a fresh animal. He can milk in a shed filled with dust, from cows tossing about the hay they are eating, into an open pail which also receives fragments from the manure-covered flanks of the cow. The milk may be poured through a dirty strainer-cloth into a churn standing in the same dusty shed, and the filled churn may be left with the milk uncooled all night until delivered next morning. The inspector may stand by and watch all this being done, and I am unaware of any legal powers which he or his authority possess to stop a single one of these unhygienic practices. Yet we are told that "local authorities should be able to take all necessary steps for the protection of the milk-supply from contamination."

The nearest approach to powers to take action would be to seize the milk under Section 116 of the Public Health Act, 1875, as "diseased or unsound, or unwholesome, or unfit for the food of man," but one is doubtful whether this section could be used for this purpose, and I know of no instance in which it has been employed. A few prosecutions have been taken under the Sale of Food and Drugs Acts for excessive dirt in milk, but there are immense difficulties in using it for a case such as the above.

Defective Powers of Control of Distribution.

Legal powers for dealing with the milk after it leaves the producer are more efficient. The 1922 Milk Act gives extensive powers over purveyors of milk since it gives power to refuse registration or to remove from the register if conditions are unsatisfactory. There are, however, numerous lacunæ in the powers of control, and, for example, there are no powers to prevent the milk being sent by train in unlocked churns (much is so sent), transferring different lots of milk from churn to churn in the streets or a railway platform or other dusty place (frequently done), heating the milk to any temperature and selling it without disclosure that it has been heated (a regular practice), transferring from churns to bottles in the street, shipping the milk quite uncooled.

From the above brief summary it will be evident that the legal position as regards milk is profoundly unsatisfactory. As will be explained in a concluding article, the Milk and Dairies (Consolidation) Act, 1915, is on the statute-book but has never been put in force, but (unless again postponed) is due to come into operation in September, 1925. The need for this or some better Act is manifest.

As the concluding article will explain, the problem of a pure clean milk-supply can only in part be solved by more definite legal powers, but all authorities agree that administrative action and control are essential factors and must play an important part. There is so much discussion about milk and the control over it that it is possible that the medical profession as a whole has failed to realise that there has never been any legal endeavour to ensure efficient supervision over the methods of milk production. Public health workers have for years past pointed out this need, and after most careful discussion have elaborated essential requirements, but invariably influences other than those of public health have prevented the sanction of legal powers to ensure the provision of even a reasonably clean pure milk-supply.

The legal position in regard to the chemical composition of milk is also decidedly unsatisfactory. The regulations made by the Board of Agriculture in 1901 under Section 4 of the Sale of Food and Drugs Act, 1899, state that when a sample of milk contains less than 3 per cent. of milk-fat, or 8·5 per cent. of milk solids other than milk-fat, it shall be presumed, unless the contrary is proved, that the milk is not genuine, due to the abstraction of milk-fat or the addition of water. The average composition of milk is recognised to be well above these standards, but these low figures are fixed because the milk of individual cows, and even in special cases the milk from small herds, may fall below, and this avoids the possibility of injustice. Such a low standard, however, means that an enormous quantity of cream is abstracted and separately dealt with, an illegal procedure hardly detectable if the reduction does not fall below the 3 per cent. fat limit.

Difficulties arise in regard to a number of points such as the warranty clauses, but the main grounds of complaint are in regard to the interpretation of what is milk in relation to these standards. The appeal decision Hunt *v.* Richardson in 1916 was to the effect that even if the milk markedly infringed the above standards no offence was committed if the justices accepted the evidence of the defendant that the milk was as it came from the cow. A simple denial of tampering is frequently accepted as adequate for this purpose. The case of Grigg *v.* Smith in 1917 further confirmed this view, and emphasised that even if the farmer deliberately only partially milked his cows, retaining the richer strippings in the udder for his calves, the article was legally milk whatever the degree of infringement of these standards. As Mr. Justice Atkin pointed out during the appeal, a farmer was now entitled by law to give a preference to his calves over the babies of his customers. The general effect of these decisions has been to reduce to futility many milk prosecutions and to reduce materially the percentage of successful proceedings against milk-vendors for adulterating milk.

IRELAND.

(FROM OUR OWN CORRESPONDENT.)

Public Health in the Irish Free State.

SEVERAL matters of interest were discussed in the Dail recently on the vote for the Department of Local Government and Public Health. Mr. T. J. O'Connell drew attention to the insanitary condition of many school buildings in the country. Some of them were, he said, death-traps for the children who had to spend their days in them. Dr. T. Hennessy stated that milk was often produced under appalling conditions. The Inspection of Dairies and Cowsheds Order was administered nominally in Ireland, but for any useful purpose it served it might as well not have been passed. Referring to the new county health administration system, Dr. Hennessy asked the Minister to state what salaries were going to be paid to medical officers. Unless the salaries offered included a decent margin for travelling expenses the work could not be discharged satisfactorily. He said, further, that the treatment of people, especially the poor, was very defective. They now had only one workhouse in a county where of old they had six. There was no proper way of treating people in these workhouses in an up-to-date manner. The dispensary houses, where poor people waited three or four hours a week, were in a very bad way—unfit for human habitation, badly lighted, and badly heated. There was also the gravest discontent amongst medical inspectors engaged in the administration of the Act. These men, who had to spend £2000 to secure diplomas and the necessary qualification, were paid the same salaries as were paid 50 years ago.

In reply, the Minister of Local Government, Mr. Burke, said that he thought that he was entitled to some credit for an improvement in the condition of those officers. In 1901 the average salary of a dispensary doctor was £100, while now it was £251—a substantial increase. They were trying to arrive at a fair scale for dispensary doctors, and, short of sealed order, they had done their utmost to get the local authorities to improve the position. In some counties the conditions of life were such that the salaries could not be so high as in the wealthier counties. The question of child welfare, he continued, was a very big one, in reality a question of raising the whole economic level of the country. Here they had an ideal to aim at rather than a reform that could be carried out fully at once. Considerable advance would be made in that work with the appointment of county medical officers when the Local Government Bill came into operation in October next. He could not state definitely what the salaries of those officers would be, but they would be considerable, £700, and perhaps more. Those officers would supervise the milk-supply, see to the sanitary condition of schools and other important matters, which could not be attended to without such officers.

In reply to a demand that vaccination should not be enforced, Mr. Burke stated that he was a believer in vaccination and vaccine treatment. In England, where there were exemptions from vaccination, there were frequent outbreaks of small-pox. Ireland was free from the disease, except for now and again a contact case at a seaport. Until the law was repealed it was obligatory on him to enforce the Vaccination Acts.

Mr. Burke's claim that the salaries of dispensary doctors have undergone a "substantial increase" hardly bears scrutiny. With the altered value of money £251 to-day can hardly be worth more than £100 twenty years ago.

Treatment of Venereal Diseases in the Free State.

A statement was issued a few days ago as to the present position of the treatment of venereal diseases in the Irish Free State. The estimate for the coming year is greater by £1000 than that for last year. The expenditure for last year was £8913, of which the State bore 75 per cent., or £6685. The amount covers, besides the maintenance of the treatment centres, the cost of bacteriological tests, carried out in the pathological laboratories at Trinity College, University College, and the College of Surgeons; and the supply of salvarsan preparations to medical practitioners. These remedies are supplied free, but only after the provision of evidence that the doctor applying for them has experience in administration of them. Formerly, diseases of this kind were little seen outside the chief cities, but evidence is now forthcoming that they are more widely spread. In recent years the numbers of patients treated under the schemes aided by the department have increased largely. Two treatment centres are established in Dublin, and the establishment of a centre in Cork is under consideration. Extension of treatment is a matter for satisfaction, for the reason that it does not indicate greater prevalence of the diseases—as to which, in the nature of things, no statistics are available—but it does indicate that a greater number of affected persons are seeking proper treatment. The treatment centres are at Dr. Steevens' Hospital and Sir Patrick Dun's Hospital. At both of these there is, besides the out-patient clinic, accommodation for intern treatment. The number of in-patients in 1923–24 was 7022, an increase of 240 over the previous year. The number was still greater last year, though the actual figures have not yet been returned. Out-patient attendances in 1923–24 numbered 25,000, but this figure includes several attendances of each patient. An inter-departmental committee on the treatment of venereal disease has recently been appointed, and is at present taking evidence on the subject.

THE CHARCOT CENTENARY.

(FROM OUR PARIS CORRESPONDENT.)

IN a series of brilliant fêtes, Paris commemorated last week the centenary of the birth of J. M. Charcot, and at the same time the twenty-fifth anniversary of the founding of the Society of Neurology was celebrated. The Academy of Medicine held a *séance solennelle*, in which numerous delegations of doctors from abroad took part. The eulogium of Charcot was strikingly delivered by one well qualified to speak of him—Dr. Pierre Marie, who was an intimate friend of the great neurologist, had been his "interne" and "chef de clinique," and who had succeeded Charcot in the professorial chair. His speech was enthusiastically received as he made his peroration "Charcot fut un médecin génial, un maître admirable, et un grand Français." An impressive ceremony was held the same evening in the large amphitheatre at the Sorbonne, the President of the Republic being present, when Dr. Babinski spoke of Charcot's work and discoveries, in particular with regard to the conditions of ataxia, chronic rheumatism, intermittent claudication, exophthalmic goitre, cerebral hæmorrhage, aphasia, lateral sclerosis with muscular atrophy, disseminated sclerosis, hysteria, and many others. "To appreciate the value of a great man's work," he said, "let us, in imagination, delete his achievements from our present knowledge, and then try to assess the extent of the deficit. To lop off from neurology all the acquisitions we owe to Charcot would be to make it unrecognisable. How many mists of error did he not scatter! Of a truth, in the realm of neurology, not a day passes but we have recourse to some of the conceptions Charcot introduced; his work is always with us. One must bear in mind, too, the influence he had on a whole generation. Charcot was an inspiring force; in contact with him, the listless student acquired the taste for work, and the plodder became animated with the ambition to follow in the steps of the man who was familiarly known to his staff as 'le Patron.' If the French school of neurology still continues preeminent, this reputation is in no small measure due to the impetus which came from Charcot. By his genius and by his toil he served not only his country but all humanity, and it is for this reason that medical men from every land have come here to-day to join with us in paying tribute to the memory of the revered master."

Dr. Marinesco, of Bucarest, who had previously read to the Academy a paper entitled "A Foreign Student's Impressions of the Personality of Charcot," then spoke in the name of the foreign delegates, which was followed by an eloquent address from Sir StClair Thomson, of London, President of the Royal Society of Medicine.

Prof. Guillain, representing the Society of Neurology of Paris, recalled Charcot's famous credo, in which he insisted, in 1883, on the necessity for a perpetual alliance between clinical observation and the facts of anatomy and physiology. "The Society of Neurology, of Paris," said Prof. Guillain, "has adopted this credo in its fullest significance. Although much progress has been made since Charcot's death in methods of diagnosis and treatment, nevertheless, all this new superstructure has been built on the solid foundations laid by Charcot—or, to change the metaphor, the harvest has ripened on the field which his ceaseless toil first broke."

The meeting concluded with a noteworthy speech from M. de Monzie, the Minister of Public Instruction. In addition to these tributes, mention must be made of the series of articles on "Charcot Intime," written by Dr. A. Souques, one of his pupils, which appeared in the *Presse Médicale*. Another review of Charcot's life and work in *Figaro*, by Dr. Maurice de Fleury, who knew Charcot intimately, gives us an amusing glimpse of the great man behind the scenes. At the height of his fame Charcot was consulted by patients from Japan, India, Russia, the coasts of the Pacific, and many other distant countries, and even grand dukes had to kick their heels in his ante-chamber, what time the great neurologist attended to much more important things. He was subject to reveries and short attacks of melancholia during which it was well for even his most intimate friends not to disturb him. It has been said of him that he lacked modesty, but Dr. de Fleury modifies this judgment, pointing out that it would be more correct to say that Charcot despised the pose of modesty affected by those who are most thirsty for praise. He was apparently a good judge of contemporary genius, and he at once appreciated the greatness of Pasteur. It is curious, by the way, that the disease known in England as Charcot's disease, is spoken of in France as *arthropathies tabétiques*. This tendency of a country to relegate the honouring of its own prophets to others is also to be observed in the fact that the disease known as Barlow's disease on the continent is modestly named infantile scurvy in England.

UNITED STATES OF AMERICA.

(FROM AN OCCASIONAL CORRESPONDENT.)

The Disappearing Rural Doctor.

THE increasing tendency to specialise in medicine with the correlated shortage of general practitioners is causing increasing concern in this country, and particularly in rural areas. Dr. G. F. Follansbee, the retiring president of the Ohio State Medical Association, recently chose this subject as the theme of his farewell address. There can never be a successful "back to the farm" movement, he says, unless we provide more doctors in the country. As it is, the modern graduate, tempted by the large fees and congenial associations of the city, rarely settles at any great distance therefrom. Dr. Follansbee would cut down the pre-medical requirements and discourage specialisation. Dr. Ray Lyman Wilbur, past president of the American Medical Association, speaking at Boston to the Association of American Medical Colleges on March 5th, held that since a physician must be world-wise to be a satisfactory guide to many of his patients, it is essential not only that he should have a first-class college education, but also that his medical curriculum should be planned to broaden his public and social conceptions. He would eliminate from the medical course "the refinements of the specialities and the intensities of the laboratories."

A very careful study of the whole problem was made last year for the General Education Board.[1] The authors give reasons for doubting whether a lowering of pre-medical standards would result in a larger supply of students. Moreover, they point out that the larger towns are already super-saturated with physicians "engaged in an incessant and vigorous competition." They find the root of the matter not in the medical curriculum, but in the social and economic disadvantages of the rural practice. "No matter how severe the competition in the medical profession may become," they say, "it will not compel a physician to live in a place where a living cannot be made." The most hopeful avenue of development, to their way of thinking, is the county-town hospital serving the needs of all the physicians in the county. This method, it will be seen, presents the possibility of some degree of specialisation to the country physician, introduces the laboratory, and calls for a raising rather than a lowering of educational standards.

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[1] The Distribution of Physicians in the United States. By Lewis Mayers and Leonard V. Harrison. New York: General Education Board (61, Broadway). 1924. Pp. 196.

Coöperative Medical Education.

At Loma Linda, in California, the dean of the medical school, Dr. Newton Evans, has introduced the "coöperative" plan of education. The 90 freshmen have been divided into two groups, and while the first division is at work in school the second is earning a livelihood somewhere in the neighbourhood. The groups change places every month. The employments found for students include nursing and general orderly (17), pharmacists' assistants (5), laboratory and X ray technicians, ambulance men, and assistants in physicians' offices. Dr. Evans reports that the plan is a success from every point of view. The students make more rapid progress, besides saving money. Opportunities are available for four times as many students as the number now employed.

Obituary.

JAMES SCOTT, M.B., C.M. EDIN.

THE death occurred in a nursing home in London on May 20th of Dr. James Scott, a former Governor and medical officer of H.M. Prison, Holloway. Born at Leith in November, 1853, he received his medical education at Vienna and Edinburgh, graduating M.B., C.M. Edin., with honours in 1877. After a period spent on the resident staff of hospitals at Bristol and elsewhere, he joined the prison service in 1881, entering with the highest testimonials from Lister, Clouston, Matthews Duncan, Grainger Stewart, and others. After serving at Dartmoor and Chatham convict prisons as assistant surgeon, he became successively medical officer at Manchester, Stafford, Holloway, and Brixton prisons.

A colleague, W. N. E., writes of him:—

"Probably Dr. Scott's happiest and most valuable official work was during his tenure of office as medical officer of Holloway and later Brixton prisons. There the remand and local prisoners of the metropolis and outlying areas came under his observation, and his wide experience, extensive knowledge in forensic psychiatry, impartiality, and thoroughness, soon made him an invaluable witness in the criminal courts, a recognised authority on criminal responsibility, and earned for him the confidence of the judges before whom he appeared. Throughout his career a hard worker, he never spared himself and accepted the responsibilities of his office with courage and modesty, and when the strenuous years of court work began to tell he was offered and accepted the post of Governor of Holloway prison and continued as such until his retirement in 1912. He was an ideal colleague, unselfish, generous, and understanding, and after a long day in court would return to the prison to discuss with his juniors such points of importance as had been presented to him a few hours before in the witness box. During these years he studied much, and was well versed in continental work on crime and insanity, but he wrote little. The only paper the writer can recall is one on the Death Penalty, read before the Medico-Legal Society, of which he was one of the earliest members, and at one time vice-president. But his counsel was constantly in demand when questions of criminal responsibility were under consideration."

A bachelor, Dr. Scott enjoyed to the end the devoted attentions of his sister, to whom numerous friends will extend their sincerest sympathy.

ROYAL COMMISSION ON NATIONAL HEALTH INSURANCE.—The thirtieth meeting of the Commission was held at the Home Office, Whitehall, on May 28th, Lord Lawrence of Kingsgate in the chair. Evidence as to the possibilities of assistance to the hospitals from the Insurance Scheme was given by the British Hospitals Association, represented by Mr. H. Wade Deacon, Viscount Hambledon, and Mr. J. Courtney Buchanan; by the Middlesex Hospital, represented by Mr. A. E. Webb-Johnson and Mr. Walter Kewley; and by the Sheffield Joint Hospitals Council, by Sir Henry Hadow and Mr. S. R. Lamb. Thereafter Mr. Owen Aves, Mr. Francis Gregg, and Dr. James Forrest, representing the Institute of Ophthalmic Opticians, were examined on the nature, extent, and cost of optical and ophthalmic treatment of insured persons. Proof-copies of the oral evidence and the relative statements submitted at the meeting of May 14th are now on sale at H.M. Stationery Office (2*s.* 3*d.*).

Correspondence.

"Audi alteram partem."

THE ENDOCRINE FACTOR IN CHRONIC ARTHRITIS.

To the Editor of THE LANCET.

SIR,—Doubtless many, like myself, perused with interest the annotation on this subject in THE LANCET of May 9th. That an endocrine element intervenes both in the rheumatoid or atrophic and the hypertrophic type of arthritis deformans cannot be gainsaid. In 1902 I drew attention to the frequency with which vasomotor phenomena—clinically indistinguishable from true Raynaud's disease—preceded and accompanied rheumatoid arthritis.[1] Also that I had seen several examples of the *coexistence* of Graves's disease—complete or larval—with rheumatoid arthritis. Moreover, having observed that, in instances in which the Graves's syndrome *preceded* the rheumatoid arthritis, *recession* of the thyroid swelling occurred before the onset of joint swellings, I suggested that in cases of rheumatoid arthritis "with apparently atrophied thyroids and possibly in others some benefit might accrue from thyroid administration." Dr. H. K. Thompson is incorrect when he states that I "found 6 out of 14 cases of rheumatism with incomplete Basedow's." As a matter of fact, in 1903 I recorded 14 examples of the complete and six of the larval or incomplete type of Graves's syndrome coexisting not with "rheumatism" but with *rheumatoid arthritis.*[2] Fourteen of the 20 cases also suffered coincidently with Raynaud's disease, and in my work on "Arthritis Deformans," I pointed out that it was precisely in cases showing these vasomotor phenomena that thyroid therapy proved so beneficial. That following thyroid exhaustion in Graves's disease a condition of rheumatoid arthritis may supervene would seem to suggest that the latter disorder develops by preference on a *hypothyroidic* substrate. Certainly one notes frequently minor signs of hypothyroidism in rheumatoid arthritis, and often simultaneously, too, symptoms suggestive of the reverse condition—*hyper*-thyroidism—tachycardia, sweating, &c. That a condition of hypothyroidism favours the onset of rheumatoid arthritis is strongly suggested by the following sequences. Thus, in a case of Graves's disease under Pauchet, rheumatoid arthritis with scleroderma developed consecutively to thyroidectomy—both conditions clearing up under thyroid therapy. Peppo Acchioto cites a woman, aged 28, with hypertrichosis of chin and neck treated by X rays. By the eighteenth séance she had developed well-marked myxœdema and widespread arthritis, which responded dramatically to thyroid therapy.[3] Deaver, too, recently remarked that after thyroidectomy the patient's resistance to "rheumatism" and "endocarditis" appears lowered. Again, a previous history of rheumatic fever is strikingly common in rheumatoid arthritis. Now, while rheumatic fever is well recognised as predisposing to Graves's disease, it is not so well realised that it is more often followed by a state of *hypothyroidism*. The sequence, (1) rheumatic fever, (2) hypothyroidism, (3) rheumatoid arthritis, is not uncommon. During the intermediary stage of hypothyroidism the subjects commonly display vasomotor phenomena or muscular cramps indistinguishable from tetany, in addition to minor signs of hypothyroidism. As to the *hypertrophic* type or osteoarthritis, which occurs so commonly in women at the menopause, I emphasised in "Arthritis Deformans" the extreme frequency with which it was associated with hypothyroidism, myxœdema, and goitre, and the value of thyroid therapy.[4]

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[1] Vasomotor and Ocular Phenomena in Rheumatoid Arthritis, Bristol Med.-Chir. Jour., 1902.

[2] Graves's Disease in Association with Rheumatoid Arthritis, Brit. Med. Jour., 1903, i., 1015.

[3] Types of Rheumatoid Arthritis, with Suggestions as to Thyroid Treatment, Edin. Med. Jour., 1904.

To sum up, in my opinion, the "sub-thyroidic" is identical with the "arthritic" diathesis as, alike in the "rheumatism" of childhood, the rheumatic fever of older subjects and in rheumatoid arthritis and osteoarthritis, we find this same hypothyroidic taint. If my contention be true, it follows that the original predisposing factors that make for the development of these joint disorders must be sought for in those conditions—intrinsic and extrinsic—that determine the production of *hypothyroidism*. Of the determinants of hypothyroidism the most outstanding is goitre, and it is, I think, significant that the death-rate and incidence of rheumatic fever, cardiac rheumatism, rheumatoid arthritis, and osteoarthritis is markedly higher in regions traversed by the Pennine, Cotswold, and Mendip ranges, the traditional, but by no means the exclusive, sites of endemic goitre in this country.

I am, Sir, yours faithfully,
Llewellyn Jones Llewellyn.
Upper Brook-street, W., May 25th, 1925.

HEREDITY IN MENTAL AND NERVOUS DISEASE.

To the Editor of The Lancet.

Sir,—In the leading article on this subject in The Lancet *of May 16th you state that the progress* of *Homo sapiens* has been not biological but sociological; and that progress has depended on his control of and ability to grow at the expense of his environment. I feel that such an opinion is one with which nearly everyone will agree, and yet as a worker in tuberculosis I find much which cannot be explained only on a sociological basis. It is rather that sociological changes, diet, education, breeding, and whatever factors modify family life do have a much more profound biological result than we imagine.

I find in experiments in cattle that if the young female is not well cared for until she calves; if, especially, her ration in protein is not adequate, or if she suffers too much exposure, her calf is born with an inability to thrive. If a bull calf, he is of poor constitution and makes poor use of his rations. Later he is often found late in developing sexual characteristics. If such a bull is used, his calves nearly all develop tuberculosis early and acutely. I find, however, that the offspring of such a bull from heifers are usually of much poorer constitution than the offspring from cows which are manifestly tuberculous. I have thought that the older cow, even if tuberculous, could afford to deplete herself more than an immature animal could, in order to correct the fault in the male germ cell.

In experiments in immunisation of cattle, I found that using the protein from the tubercle bacillus on cows before calving that the health of the cow improved, and the subsequent calf was much more of a thriver. At the same time, although it was thus feasible to promote immunisation antenatally, I found in numerous experiments that the greatest immunising agent is a resistant sire. The female, like the soil, will respond if cared for, but the sire must be right. I considered that the best sire was an immunised sire, or one known to be strongly resistant.

That such factors hold in the human race I believe from a considerable experience of tuberculosis in this country and in Western Canada. When stock deterioration sets in, the *female suffers*, and then her male offspring, even if he grows up to be a fair specimen of a man, is apt to bring children into the world that nobody can do anything with. In nature such males would be wiped out quickly. Contending, then, that society aids in man's progress, it can only do so as long as it continues to perform the duty of batman to Mother Nature herself. So George Meredith thought.

If man's progress is sociological only, then we cannot stand. Nature will have nothing to do with helpers who forget her stern method of soil replenishment. For then early death becomes a biological necessity. A point of importance, too, is that a breeder on poor land may, by buying in concentrated food actually create a higher class of animal than a breeder on good land. The peril of the breeder on good land is that he relies too much on his good grass; while the peril of the breeder on poor land is that if business is bad, the stock deterioration must be faster, if it does not pay to buy in food for them.

This country resembles the latter breeder. We have moved along sociological lines and have been able to sustain a high standard of society by buying in our protein from abroad. At the present moment there is some deterioration owing to the lower standard of wages and so on. The women suffer as usual; and while all sorts of remedies may be suggested, none are of great value, excepting forbearance towards overstocking. The deterioration will be swifter in proportion to the inability to rear good in preference to many inferior stock—stock prone to be infected. Therefore the comfort that comes from attention to a betterment of the environment may be short-lived and also it may prove too costly.

The strengthening of the hereditary factors is of vast importance. This is a difficult matter; yet much could be done by a fuller realisation that biological laws are bound to be paramount in the long run.

I am, Sir, yours faithfully,
J. J. Thomson,
Chief Clin. Tuberculosis Officer, North Riding of Yorks.
May 20th, 1925.

THE RÉGIME OF FLUIDS IN VARIOUS FORMS OF NEPHRITIS.

To the Editor of The Lancet.

Sir,—In patients suffering from various forms of nephritis it is essential to regulate with care the fluid intake, as damaged kidneys necessarily modify diuresis, and therefore the rôle of water in the body. I here suggest some guiding points in the administration of fluids in various forms of kidney trouble.

Acute Forms of Nephritis.—Milk is the régime of choice for the acute forms of nephritis, as milk, while it is a complete form of alimentation, possesses the advantage of constituting a diet which is both practically free from sodium chloride and is diuretic. One litre of milk contains only 1·50 to 2 g. of NaCl, along with 40 to 50 g. of lactose, an essentially diuretic sugar. But milk diet, putting aside all question of digestibility, possesses one grave defect in that it is purely a fluid diet. For every 1000 g. of milk there are about 850 g. of water. That point should never be lost sight of when a patient suffering from acute nephritis is put upon a milk diet. The milk must be graduated in relation to the functional possibilities of the kidney, and should therefore be divided into small doses, which can be distributed over the whole 24 hours, the quantity of the doses being determined according to the amounts of urine which the kidneys are capable of eliminating in the 24 hours.

Chronic Forms of Nephritis.—The fluid régime differs according as one has to deal with the three great syndromes which either singly or all together characterise the evolution of these conditions: (1) The chloruræmic syndrome; (2) the syndrome of hypertension; (3) the *nitrogen-retention syndrome.*

(1) *The Chloruræmic Syndrome.*—Here the fluid régime must overcome the chloride retention, and milk diet is therefore indicated. But in forms of chronic nephritis this diet, if prolonged, will cause dyspeptic disturbances. Moreover, after the lapse of some days it acts neither upon the œdema nor upon the albuminuria. Milk must be reserved for acute attacks with more or less grave threatenings of uræmia. Otherwise the patient is put on a mixed diet, or even one without milk, but always dechlor-

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[4] Arthritis Deformans, pp. 226–229, 1919.

urated, and the beverages consist of diuretic mineral water, increased in proportion as the power of elimination on the part of the kidney becomes more marked.

(2) *Syndrome of Hypertension.*—It is in the syndrome of hypertension that the régime of fluids perhaps requires the most delicate handling; but it is also in this syndrome that when it is well ordered and strictly supervised, its utility is specially manifest. It was only a short while ago that this water treatment of hypertension was first attempted. A few years ago it would have seemed to be a dangerous error to suggest the giving of fluids to patients whose greatest trouble was that of hypertension. It was known, however, that the evolution of these cases of hypertension was characterised by a tendency on the part of the organism to auto-intoxication, principally due to renal and hepatic angio-sclerosis. Physicians attached to hydro-mineral diuretic stations have shown by their detoxication treatment that the real danger did not consist in giving beverages to such patients, but in withholding the beverages from them. At one time the classic treatment was the dry diet. To-day the good effects of treatment by diuresis are recognised; fluid régime in cases of hypertension is well-defined and definitely established. But the water treatment requires caution. The treatment must be supervised with the sphygmomanometer at hand, and with the check upon elimination of urine always in view, for over-distension of the vascular system is always possible, and excess of arterial pressure may result from an attack of angio-spasm. But with these precautions good results may be obtained from diuresis treatment such as that employed at Vittel. The dosage of fluids is carefully regulated and the fluids are taken fasting, early in the morning or late at night, the patient lying down (clino-statism). The sum-total of the fluid ingested should never be great. One must always aim at adequate diuresis without polyuria, which could only be preceded by an increase in the volume of blood and increase of blood pressure, possible causes of immediate untoward events.

The patients who secrete much water during the day should be put on a relatively large amount of fluids. But those who secrete water mainly during the night (nycturia) should be very carefully watched. All excitants of the cardiac nervous system, alcohol, coffee, and tea, should be forbidden. The bouillons and meat-juice which possess vaso-constrictor properties and cause a rise in the blood pressure should also be interdicted. And it is very particularly in such cases that beverages taken late at night are specially desirable. Drinks at meals should always be restricted.

(3) *The Nitrogen-Retention Syndrome.*—In the nitrogen-retention syndrome the permeability of the kidneys is specially affected in all its modalities. Here uræmia assumes a threatening aspect. The diet should be of low nitrogen content, as often as possible lacto-vegetarian and slightly dechlorurated. As a rule there is no œdema. The water is no longer retained by the salt and is not dependent upon chloride retention. But, as a set-off, arterial hypertension and cardio-vascular phenomena are almost always present. At all costs, fatigue of the heart must be avoided. With that aim in view the amount of fluids must be reduced and they must be distributed in small doses frequently repeated in order to obtain adequate diuresis. "The Fractional Diuresis Test," which I discussed at length in THE LANCET,[1] indicates what is the secretory power of the kidney for water, and gives the precise indications for the drink régime. If a kidney can only eliminate 60 c.cm. of water at the most every half-hour, or else 50 or 30 c.cm., it is 60, 50, or 30 c.cm. of water that should be given as a maximum every half-hour. Thus one is enabled to obtain the maximum diuresis without in any way overtaxing the cardio-vascular system.

I am, Sir, yours faithfully,

P. L. VIOLLE,

Consulting Physician at Vittel; Director of the Laboratory, Institute of Hydrology, Paris.

May 25th, 1925.

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[1] THE LANCET, 1924, i., 998.

CLEAN MILK IN HOSPITALS.

To the Editor of THE LANCET.

SIR,—Since the autumn of 1917 the health committee of the city of Worcester has had a small herd of dairy cows, free from tuberculosis, in a farm which it has established adjoining the isolation hospital. The committee for some years previous to 1917 had endeavoured to obtain milk from the neighbouring farmers from cows certified to be free from tuberculosis, but no farmer in the neighbourhood would contract for milk on those terms. The small herd of cows is managed by a herdswoman who is well trained and competent for the work, and the results have year by year been very satisfactory.

It is an astonishing thing to me that the educated British public are so apathetic as regards their milk supply.—I am, Sir, yours faithfully,

MABYN READ, M.D.,

Medical Officer of Health, Worcester.

May 26th, 1925.

EXCESSIVE INFANT MORTALITY AT MARKET DRAYTON.

To the Editor of THE LANCET.

SIR,—I note in your issue of May 16th a reprint of my question to the Minister of Health with regard to the infantile mortality of Market Drayton which is double that of the neighbouring Newport, and thrice that of Wellington, the other contiguous locality. I presume that there must be reasons for this unhappy phenomenon, which I see was noticed at a public meeting in the place itself held early in this month. As a report on the subject exists, it is curious to speculate on the reasons which have prevented it from being made public. In the interests of Market Drayton itself one would have supposed that the evil being recognised, the remedy should be prescribed.—I am, Sir, yours faithfully,

C. W. C. OMAN.

House of Commons, May 27th, 1925.

BAKER'S ITCH AND WORKMEN'S COMPENSATION.

To the Editor of THE LANCET.

SIR,—The question raised is hardly as simple as Captain J. T. Ainslie Walker would suggest. I have had under my purview as many cases of dermatitis in confectioners as in bakers. The symptoms in both have been practically indistinguishable. No improvers are used in the confectionery trade. Again, of the number of cases of "baker's itch" which have been under my personal care, so far as I could ascertain, only about one-half were using flour which was supposed to contain improvers.

I am, Sir, yours faithfully,

R. PROSSER WHITE.

Wigan, June 2nd, 1925.

THE BATEMAN APPEAL FUND.

To the Editor of THE LANCET.

SIR,—In spite of the generous and chivalrous support of THE LANCET, and in spite of the appeals that others of us have made—made on behalf of one of us in dire distress—only a few more pounds have been added to this fund. It is difficult to realise that such indifference can exist in our profession; a British court of justice seems no longer our standard of right and wrong. It is harder still to think what the great names of the past would think of our indifference; generosity was ever their supreme characteristic. I enclose a third small contribution in the hope that those who are too busy, those who are successful, those who are indifferent, and all those who pass by, may for a moment pause and put themselves in Dr. Bateman's position and by so doing may be stimulated to help a colleague passing through a physical and mental anguish we may all well hope to be spared.

I am, Sir, yours faithfully,

A. GRAHAM-STEWART.

Margate, May 31st, 1925.

INTER-STATE POST-GRADUATE ASSEMBLY OF AMERICA.

VISIT TO LONDON, JUNE 2ND–6TH, 1925.

President—H.R.H. THE DUKE OF YORK, K.G.

INAUGURAL MEETING.

ON the morning of Tuesday, June 2nd, at Wigmore Hall, Wigmore-street, when the Duke of York presided over the inaugural ceremony, His Royal Highness, in extending a cordial welcome to the Guests from Overseas, said that some came as representatives of a great and progressive nation with which already we had so much in common, while others were our own kinsmen from Canada, a vast Dominion of self-governing peoples whose record of service to the Empire was unsurpassed. These considerations alone, he said, would have ensured for the Assembly a more than friendly reception. But further, our guests, he said, formed a great army of skilled physicians and surgeons whom we were delighted to honour, so that the members of the medical profession in this country were united in their desire to accord to the Assembly a hospitable reception, and to make the occasion both instructive and enjoyable. The names of the distinguished lecturers and demonstrators on the programme showed, he held, that the time of the visitors would be well spent, for they would secure at first hand the views and opinions of those whose knowledge and skill had combined to raise them to their highest rank in their profession. In conclusion, His Royal Highness said that it was his earnest hope that when the members of the Interstate Post-Graduate Assembly left our shores they would not only have obtained professionally some benefit from this visit, but that they would also take back with them the happiest recollections of their brief stay in our midst. Expressing his appreciation of the honour which he felt at being made an honorary member of the Assembly, the Duke of York said he had been much interested in its history, and thought that Dr. Mayo was to be congratulated on the growth and expansion of an organisation which in the short space of nine years had done so much valuable work. He congratulated Mr. Franklin on the devotion of much time and energy to the organisation of the visit, and declared the meeting of the Assembly open.

Mr. Neville Chamberlain, the Minister of Health, said that he was happy in being permitted on behalf of His Majesty's Government in general and on behalf of the Ministry of Health in particular to add to the President's words of welcome. To cross the Atlantic was no longer the adventure that it was a few years ago, but he realised that many of his hearers must have travelled hundreds of miles before setting foot on board ship, while all must have made special arrangements in order that their work might be adequately carried on during their absence. It was, therefore, a compliment of no common order to this country that they had thought it worth while to be present. Among the guests, he pointed out, were representatives of every city in the Dominion of Canada and every State in the American Union, and it was gratifying, in this small island, to be able to open arms to a whole continent at once. It was, too, an impressive thought that our visitors would carry back with them the results of their observations and the additions to their knowledge and spread them broadcast through so vast an area, returning to fight the great enemy of humanity, disease which knew no discrimination between nation and nation, reinforced and invigorated by experience of methods that had proved effective in the hands of others. The benefits, he concluded, would not be all on one side, for our physicians and surgeons would learn from contact with their guests, and he wished to all the Assembly a time of pleasurable and profitable study.

Sir Humphry Rolleston, President of the Royal College of Physicians of London, in extending the warmest welcome to the overseas colleagues, said that meetings such as these increased, if that were possible, sympathy as well as promoting common action. Medical men were students all their days and were most anxious to learn how they could best apply their studies as post-graduates and so keep up with the ever-advancing tide of medical knowledge. Post-graduate education was a very urgent problem in London and much could be learned from the American visitors. Less than ten years ago there was a Tri-State Assembly which had now extended and included all the provinces of Canada and all the States of the Union, and we, in this country, had much to learn from such an organisation. In conclusion, Sir Humphry Rolleston referred to that "beloved physician," Sir William Osler, who would have welcomed such a meeting, while he paid a special tribute to the honorary organiser of the Assembly, Mr. Philip Franklin.

Sir John Bland-Sutton, President of the Royal College of Surgeons of England, drew a humorous parallel between the migration of birds and the irruption of doctors from Canada and the United States under the leadership of Dr. Mayo. It was a good thing, he said, to meet a man face to face in his own wards or operating theatre, but better still to meet him socially, for in this way lasting friendships were formed. As President of the Royal College of Surgeons of England he bid them welcome.

Mr. Alanson B. Houghton, the American Ambassador, on behalf of his countrymen, thanked the Duke of York for his support of the Assembly. In accepting the presidency of the British organisation, he said, His Royal Highness had furnished one more evidence of the reality of those friendly ties which bound the countries and peoples together. The gathering to-day would recall the comradeship of the British and American medical professions in war, now followed by a comradeship in peace. Further, he desired to thank Mr. Neville Chamberlain for his interest and goodwill, and it was a source of distinct satisfaction that the Minister of Health should be here to welcome them, for no man was more keenly interested than Mr. Chamberlain in seeking to bring about a fuller coöperation in research. To Sir Humphry Rolleston and to Sir John Bland-Sutton they also owed a debt, and he could only hope that one day they would be able to repay it in some slight degree if both those gentlemen would honour the United States by a visit. To the honorary staffs of the numerous hospitals, who had combined to make up a full programme of post-graduate work, and to Mr. Philip Franklin he further expressed a debt. Nowhere else than in England, as he knew from experience, would his compatriots find a hospitality so generous, gracious, and altogether delightful, said the Ambassador, while warning the visitors against its potential dangers.

Dr. Charles H. Mayo expressed the great pleasure that it gave the members of the Assembly to have a Royal welcome seconded by many able and representative speakers of England. Such a welcome would be recorded in all the States and Provinces of North America; it would add to the warmth of feeling for the mother country, and would bring together more closely the English-speaking peoples and maintain their high position in all scientific work. In conclusion, and addressing the Duke of York, Dr. Mayo said the Assembly had hitherto had but one honorary member, Mr. Coolidge, the President of the United States, but now they wished to double the honorary membership and if it be His Royal Highness's pleasure, Dr. Mayo said, "by and with the authority vested in me by the members of the Interstate Post-Graduate Assembly of America I herewith and hereby declare you an honorary member of this Association with all the rights and privileges pertaining thereto."

His Royal Highness having vacated the chair, a series of brief lectures, introducing fundamental scientific questions, was commenced.

THE ÆTIOLOGY AND MEDICAL TREATMENT OF GALL-BLADDER DISEASE.

BY SIR HUMPHRY ROLLESTON, BART., K.C.B., M.D.

A KNOWLEDGE of the causation of gall-stones and inflammation of the gall-bladder is, of course, essential for satisfactory treatment.

In the first place it should be mentioned that the clinical label of gall-stones or cholelithiasis is often and naturally used for symptoms common to them and to inflammation of the gall-bladder—conditions very often combined but also occurring independently. Although a distinction is drawn between them in systematic treatises, and of course exists, they are very closely bound up together, being often successive or alternating stages in the patient's history and giving rise to very similar symptoms. Unless a calculus is indicated by X ray examination or is passed in the stools, a diagnosis of gall-stones, even though there may have been an attack of acute biliary colic, is open to doubt, and yet it is more often made than the less committal one of cholecystitis, which in the original but now forgotten sense means merely disease of the gall-bladder. It is, of course, true that the termination *-itis* now has a universal significance of inflammation, but it was not always so. Originally the affix -itis was a Greek feminine adjectival termination, and in words like neuritis, peritonitis, pleuritis, agreed with νόσος (disease) understood, so that, for example, ἡ νευρῖτις νόσος simply meant *the* disease of the nerves; the implication that *the* disease of organs was inflammatory came later. In a somewhat similar manner melæna signifies *the* black disease, and pneumonia *the* disease of the lungs.

The Formation of Gall-stones.

There are two distinct views about the formation of gall-stones:—

(1) The infective or inflammatory theory enunciated by Naunyn is to the effect that a local inflammation of the gall-bladder walls leads to an increased formation of cholesterol by the epithelium lining the gall-bladder, and that the liberated cholesterol is cemented together by bilirubin calcium. According to this view, cholecystitis is a necessary antecedent to the formation of calculi, but it has been urged that cholelithiasis does not invariably follow cholecystitis, and therefore that some additional factors, such as an increased amount of cholesterol, stagnation with excessive concentration of the bile in the gall-bladder, are necessary. It should be noted that concentration of bile to perhaps one-eleventh of its original bulk is a normal function of the healthy gall-bladder (Rous and McMaster), and that therefore an excessive concentration, such as might occur in stasis, must be premised. That infection of the gall-bladder and biliary stasis cause cholelithiasis has been repeatedly proved in animals (Gilbert, Mignot) and the association of infection—post or propter—with gall-stones is universally acknowledged in human pathology.

Another explanation of the mechanism by which infection causes cholelithiasis is that put forward by Hurst—namely, that as cholecystitis always sets up hepatitis (Evarts Graham), the formation of bile acids, which keep cholesterol in solution, is inhibited, and accordingly cholesterol is precipitated. Cholecystitis may be set up by micro-organisms reaching the gall-bladder wall by the blood-stream—for example, from the throat and from abscesses at the apices of the teeth; streptococci from the throat have been found to have a special selective tendency to attack the gall-bladder (Rosenow). But, generally speaking, infections of the alimentary canal, especially with virulent *B. coli*, appear to be the more common causes of cholecystitis, the micro-organisms being carried by the portal vein to the liver, excreted into the bile, and finally reaching the cavity of the gall-bladder. Thus appendicitis and cholecystitis are frequently present in the same patient, and probably the usual sequence of events is that the infection originates in the appendix and secondarily attacks the gall-bladder. It has recently been urged that latent appendicitis, in which there is no clinical history of an attack, is often the antecedent of cholecystitis (Caplesco).[1] When an operation on the gall-bladder is undertaken, the appendix is usually and rightly examined, and if diseased removed, so to speak, in the surgeon's stride; but the converse is not so frequent, and accounts for some cases in which symptoms persist after operation, because the reflex dyspepsia is partly or largely due to the irritation exerted by a chronically inflamed gall-bladder. In the past enteric fever, meaning thereby infections due to *B. typhosus* and *B. paratyphosus* A, B, and C, took a high place in the ætiology of cholecystitis and gall-stones for the following reasons: The clinical sequence was often noted, typhoid bacilli are constantly present in the bile in the disease, and they have been demonstrated in the calculi. But there is a reaction against this view, for enteric fever has become comparatively rare in this country, and gall-bladder affections are, if anything, more frequently recognised. Blaxland[2] found a history of enteric fever in 5 per cent. of a series of 100 cases in Norwich; Chauffard[3] in 19 per cent. of 100 cases in Paris. In America, where enteric fever was until comparatively recent years common, a history of that disease would naturally be higher in all patients; at the Johns Hopkins Hospital, among 888 cases of gall-bladder disease, 28 per cent. gave a history of enteric fever (Blalock).[4] Infections are prone to occur in the puerperal state, and this is one, but not the only or chief, cause of the frequency of gall-bladder disease in women who have borne children.

Rovsing[5] from examination of 530 cases of gall-stones found that 314 were sterile, and believes that infection of the gall-bladder is always secondary to the presence of gall-stones, and further, that when infection has once occurred it persists and does not die out. He thus meets the obvious criticism which the adherents of the inflammatory theory might bring against his results—namely, that failure to cultivate organisms from the gall-bladder does not prove that there has never been any infection.

(2) The biochemical or metabolic theory that there is an increase in the cholesterol content of the blood and so in the bile, and that thus pure cholesterol calculi are produced (Aschoff and Bacmeister); but by damaging the gall-bladder and reducing its resistance to infection these originally aseptic calculi may be indirectly responsible for the production of the commoner calculi as mentioned above. Experimentally Rous, McMaster, and Drury have aseptically produced showers of small calculi composed of organic debris and calcium carbonate and calcium-bilirubinate in sterile bile; and it has been suggested that in man simultaneous formation of multiple calculi occurs from metabolic or chemical alterations in the composition of the bile—a critical deposition. This is supported by the very large number—the record at present appearing to be 14,000 (Schackrev)—of small calculi all of about the same size.

The origin of the blood cholesterol is of interest in connexion with the prevention of gall-stones. Like uric acid, it may be either endogenous—namely, produced in the body, or exogenous and taken in as a constituent of foods, especially brains, yolk of eggs, and fats. The organs of the body richest in it are the central nervous system, the cortex of the adrenals, and the corpora lutea. Sixty years ago Flint of New York considered that it was formed in the brain, and so passed into the circulation; Chauffard's pupils, Laroche and Grigaut,[6] in 1913 disproved this by experiment. Chauffard, Laroche, and Grigaut[7] believe that cholesterol is formed in the adrenal cortex and the corpora lutea, especially of pregnant women who have to supply the fœtus with large quantities of cholesterol for its nervous tissues, whereas Landau and McNee[8] regard the undoubted accumulation of cholesterol in the adrenal cortex in arterio-sclerosis, and in the corpora lutea as deposits and as an index of the cholesterol content of the blood. The extent of the endogenous origin of cholesterol is thus open to question.

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[1] Caplesco, C. P.: Bull. Acad. de Méd., Paris, 1924, 3e ser., xcii., 869.

[2] Blaxland: Practitioner, 1914, xcii., 646.

[3] Chauffard: Leçons sur la Lithiase Biliaire, p. 36, 1914, Paris.

[4] Blalock: Bull. Johns Hopkins Hosp., Baltimore, 1924, xxxv., 291.

[5] Rovsing, T.: Acta Chir. Scandinav., 1923, lvi., 103.

[6] Vide Chauffard: Leçons sur la Lithiase Biliaire, 1914, p. 54.

[7] Chauffard: Laroche et Grigaut, Ann. de Méd., Paris, 1920, viii., 149.

The cholesterol content of the blood varies much with the amount taken in food, but in normal persons it is difficult to induce a permanent well-marked increase in the amount of cholesterol in the blood, and thus suggests that there is a metabolic mechanism which maintains an equilibrium in this respect. But disorder of the fat metabolism, like that of protein and carbohydrate metabolism in gout and diabetes, may well exist and lead to a retention of cholesterol in the body. In this connexion it may be noted that gall-stones are not infrequently hereditary. Any inherited disability to deal with the metabolism of fats would, of course, render the subject specially prone to develop cholesterolæmia when on a diet containing much cholesterol. Such a diathesis helps to explain differences in the racial incidence of gall-stones—common in German women, rare in Russians, Indians, and Japanese. A high cholesterol content of the blood may also depend on diminished excretion; thus in hepatic insufficiency, especially in obstructive jaundice, the amount in the blood is usually increased, and in chronic cases deposits, or tophi, of cholesterol—xanthomas—may occur, a process analogous to uratic tophi in the gouty; the familiar arcus senilis, the sparkly synchises in the vitreous humour, and the white spots of albuminuric and diabetic retinitis are also regarded as deposits of cholesterol. In the form of slight cholecystitis known as "the strawberry gall-bladder," from the contrast between the reddened background and the yellow specks due to collections of cholesterol in the mucosa, it is unsettled whether the cholesterol in the villi is absorbed from the gall-bladder bile or deposited from the blood. But by whatever route the cholesterol reaches the inside of the villi it seems probable that detachment of these cholesterol-laden villi provides the nuclei of future multiple calculi. Aschoff suggested that women after delivery, who are prone to show a high cholesterol content of the blood, are particularly likely to develop gall-stones if they do not suckle their babies and thus fail to excrete fats in their milk.

To sum up, it may safely be stated that both these ætiological factors of gall-stones—the infective and the metabolic—are operative, sometimes one alone, probably more often both together, the infective factor being enforced and assisted by the metabolic; both therefore must be taken into account in the prophylactic measures and the medical treatment.

Prophylactic or Preventive Treatment.

From the point of view of the infective causation it is obvious that focal infections, such as pyorrhœa, dental caries, enlarged tonsils, suppuration in the accessory nasal sinuses, and appendicitis should be removed or otherwise cured. In enteric fever, in which the bile in the gall-bladder contains typhoid or paratyphoid bacilli though cholecystitis is relatively infrequent, it is well to give during convalescence hexamine for its bactericidal action. The rationale of the hexamine treatment of gall-bladder infections requires a few words of explanation, and may conveniently be dealt with here; hexamine is not itself an antiseptic, but in an acid medium it gives off formaldehyde which is; as the bile is not acid it is not at first sight clear how the administration of hexamine removes experimental infection of the biliary system, as shown by Crowe,[9] how it sterilises the infected bile from a biliary fistula, and how it appears to act beneficially in cholecystitis. There has, therefore, naturally been some scepticism as to the real value of hexamine in biliary infections, and indeed De Edes,[10] though not dealing with gall-bladder infections, concludes, as the result of a rather elaborate chemical research, that there is not any good evidence for the use of hexamine orally or intravenously as a systemic antiseptic in various diseases and localised infections. Recently, however, Knott[11] has shown that in infected bile the bacteria produce around them sufficient acid to liberate formaldehyde. A large quantity, according to Crowe[12] 75 grs. daily, of hexamine is required to disinfect the gall-bladder and bile-ducts; but amounts far short of this often irritate the urinary bladder causing frequent micturition so as to interfere with sleep and the patient's comfort, and sometimes even hæmaturia. As the vesical irritation is due to the liberation of formaldehyde in acid urine, Hurst[13] gives sufficient citrate of potassium to keep the urine alkaline and thus obviates this troublesome result, finding that eventually as much as 90 grs. daily can be given.

From the biochemical or metabolic aspect of causation, prophylactic measures should be directed to the restriction of foods rich in cholesterol in patients prone to develop a high cholesterol content of the blood as the result of pregnancy and recent enteric fever. The foods in question are yolk of eggs which contain the closely allied body lecithin, brains, and fats such as cream, butter, bacon, pork, stews, fried fish, goose, duck, sweetbreads, liver, kidneys. Vegetables, with the exception of beans and peas which are fairly rich in phylocholesterol, and meats, skimmed milk, carbohydrates and sugar which are so valuable in keeping up and restoring the nutrition of the liver cells, may be taken; but with regard to the last it must be remembered that obesity should be guarded against. Food should be taken at comparatively short intervals and in small amounts, as this leads to frequent evacuation of the gall-bladder. Over-eating should be prevented and exercise as far as possible insisted on. A lax condition of the abdominal walls should be met by breathing and other exercises.

Medical treatment is, of course, not so radical or so satisfactory as the surgical removal of the calculi and the gall-bladder which when symptoms occur is almost always infected and inflamed. Attempts to dissolve gall-stones cannot be regarded as likely to succeed. Calculi have been introduced into healthy gall-bladders of animals and observed to disappear, but there is serious doubt whether this observation can be applied to man, for these experiments were performed on dogs (Harley and Barratt; Bain, von Hansemann) in which the cholesterol content of the bile is low, and further, human gall-bladders are usually infected and inflamed. Olive oil certainly dissolves gall-stones in a test-tube, but the administration of olive oil by the mouth cannot reach the gall-bladder. There is a fallacy about the supposed success of the treatment by olive oil given orally, namely, that the altered oil—crystals of the fatty acids—may be regarded as softened calculi. Some of the good clinical results ascribed to olive oil may be due to the inhibition of hyperchlorhydria accompanying the reflex gastric disturbance due to the gall-bladder irritation. Oleic acid has been regarded as a cholagogue, and oleate of sodium is sometimes given in order to increase the flow of bile and so lead to solution of the cholesterol of the calculi by the bile acids. But of the numerous drugs at one time or another spoken of as cholagogues bile salts are the only certain ones; salicylate of sodium, which is often given with this object, benzoates, chloral, and vitamin extract of yeast, though stated by some, cannot be regarded as proved to be true cholagogues; bile salts are given in a cachet and capsule. Lyon's method of non-surgical drainage of the gall-bladder by aspiration through a duodenal tube, after spraying the duodenal papilla with magnesium sulphate solution to relax Oddi's sphincter at the lower end of the common bile-duct, appears to be admirably adapted for the relief of cholecystitis. In other respects the general treatment is on much the same lines as the prophylactic measures.

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[8] Landau, M., and McNee, J. W.: Beitr. z. path. Anat. u. z. allg. Path., Jena, 1914, lviii., 667.

[9] Crowe, S. J.: Johns Hopkins Hosp. Bull., Baltimore, 1908, xix., 109.

[10] De Edes, F.: Arch. Int. Med., Chicago, 1924, xxxiv., 511.

[11] Knott, F. A.: Guy's Hosp. Reps., 1923, lxxiii., 195.

[12] Crowe, S. J.: Johns Hopkins Hosp. Bull., Baltimore, 1912, xxiii., 235.

[13] Hurst, A. F.: Practitioner, London, 1923, cxi., 195.

THE FIRST AND LAST KINK.

BY SIR W. ARBUTHNOT LANE, BART., C.B., F.R.C.S.

A QUARTER of a century has elapsed since I described this condition and called the attention of the profession to what I believe to be by far the most important evolutionary structure in the human body which has ever been observed, and one which is productive of very disastrous consequences.

I was led to the discovery and appreciation of the importance of this structure by a study of the changes which the body undergoes when its mechanical relationship to its surroundings is altered from the normal. I found that the human anatomy bears a simple definite mechanical relationship to its surroundings and varies rapidly with any change in that relationship. This I demonstrated in the clearest manner possible in the dissecting room of Guy's Hospital by the examination of the dead bodies of labourers who had been engaged during their lives in various arduous occupations. A careful investigation of the changes which their structure underwent in consequence of the special functions performed showed me that they were so characteristic, so definite, and so precise, that from an examination of the anatomy of these labourers I was able to determine with absolute accuracy the life-history of the individual, or in other words, the functions he performed during his life-time.

Laws Governing Changes in Structure.

The laws which I formulated as governing these changes are quite simple, and can be readily understood by a study of these labour conditions.

They are: (1) The skeleton represents the crystallisation of lines of force; (2) pressure produces definite changes; (3) strain produces definite changes; and (4) without the presence of pressure or strain an old mechanism may be altered or an entirely new one developed. The resulting changes develop to meet the altered mechanical relation of the individual to his surroundings and economise the expenditure of nerve and muscle energy.

The principles which govern the mechanical relationship of the organism to the gastro-intestinal tract which is inside the body differ in no particular from those that influence its behaviour in its mechanical relationship to surrounding objects. *Precisely* the same laws apply in both instances.

The consequences which result from the habitual overloading of the end of the large bowel with at least 24 hours' accumulated contents (a condition which is practically universal in our state of civilisation and is recognised as being normal), are met on the part of the organism by an attempt to control the excessive dilatation, distension, and elongation of the portions of the intestine which are affected by that accumulation. The effort to establish this control is usually more or less successful, but the degree of success attained varies with the vitality of the individual. The attempt to control these changes consists in the formation of acquired firm, strong bands or membranes simulating peritoneum in appearance. These develop along the lines of strain on the under surface of the mesentery. They gradually secure, contract, and shorten up the mesentery of the iliac colon and finally grip the bowel itself, rotate it on its longitudinal axis, and eventually fasten it to the floor of the iliac fossa. The alteration in the functioning of this portion of the intestine which results from the formation of these bands and their mechanical effect upon the mobility of the intestine lead to a corresponding degree of interference with the passage of material through the anchored and obstructed bowel. In civilisation the consistence of the contents of this portion of the large bowel is almost always firm and may be often quite hard. This fact again increases still further the difficulty which is experienced in the passage of the faecal matter through the obstructed segment of bowel.

The "First and Last Kink" and its Consequences.

Here I would again remind you of another law which I have formulated—namely, that all changes that ensue in the body from an endeavour on the part of the organism to establish a mechanical relationship to abnormal surroundings at first serve a useful purpose, but later tend to shorten the life of the individual. In no instance is this law so true and so clearly illustrated as it is in the case of what I call the "first and last kink." The effect upon the entire gastro-intestinal tract is in the first instance simply mechanical. Later it results in the contamination by septic organisms of the nutrient material dammed back and stagnating in the small intestine and stomach and in the terrible sequence of the innumerable morbid sequelæ which ensue in consequence of these mechanical and toxic conditions. When I first called attention to this kink and its consequences the less observant and more conservative section of the profession denied their existence, and some isolated members, with that lack of courtesy which is so often associated with a corresponding want of comprehension, asserted that the kinks did not exist in the patient's body, but were present only in my brain.

The more intelligent section of the medical profession looked for and investigated the several kinks I had discovered and finding them began by debating their origin. Some believed that they were produced by inflammation, since they could not conceive an acquired band or adhesions arising in any other way. Others considered that they were congenital. Many observers, while recognising them, were of opinion that they did not exert any control over the passage of the contents through the anchored bowel. The simple manner in which they come about was not realised, for the obvious reason that the very definite changes which the body undergoes when its mechanical relationship to its surroundings are altered from the normal had received little or no attention from the profession.

The Atonic Variety of Obstruction.

While in a considerable proportion of cases the organism has sufficient vitality to form these bands and to effect an obstruction limited to this area in a number of feebler subjects owing to a want of formative capacity, either no bands are developed or they are not sufficiently strong and rigid to secure the colon which escapes from their controlling influence. In consequence, the lower bowel becomes enormously elongated and distended. The puddling in the pelvis of this elongated and dilated distal portion of the colon produces a degree of obstruction to the passage of solid contents through it which is increased by straining in the effort to expel the motion. It is important to realise that the obstruction so produced is often much greater than that brought about by the limited and localised obstruction caused by the acquired bands forming the first and last kink. The consequences of this type of obstruction differ definitely from those produced by the kink in that throughout the length of the proximal intestinal tract little or no effort is made to control the elongation and distension of the colon, small intestine, and stomach, so that the ulceration and cancer of the large bowel, duodenum, and stomach, so common in the case of the first and last kink due to a definite local constriction, do not occur. On the other hand, in this type, which may for convenience be called the atonic variety, the infection of the food-supply which is accumulated in much greater quantity in the elongated dilated bowel, the consequent intestinal auto-intoxication, and the changes resulting from it form a very much more marked feature. All the mechanical changes I described have been confirmed radiologically by Dr. Jordan, who has studied the subject so closely for many years. They have also been fully verified in every detail by Dr. Mutch by his accurate and careful investigations in the post-mortem room on the bodies of patients who died of cancer in the wards of Guy's Hospital.

Disastrous Sequelæ.

I need hardly again remind you of the disastrous sequelæ of the obstruction of the colon, either by the formation of bands or by an excessive elongation of its terminal segment. Briefly, they are inflammation of the mucous membrane of the tract, ulceration, first simply septic and often later cancerous at the several areas exposed to constant impact or strain, infection of the intestinal contents, the contamination of the food-supply of the body, the flooding of the circulation with organisms, toxins, and other poisonous bodies, and the deterioration of the cells of every tissue in the body, rendering them liable to the invasion of the organisms of innumerable diseases. As the result of my observations, which have now extended over many years, I am exceedingly impressed by the sequence of cancer and intestinal stasis. In my opinion these are two factors in the causation of cancer as we see it in civilisation—namely, the *mechanical and the toxic.*

I have observed cancer imposed on the mechanical and toxic results of chronic intestinal stasis so frequently that I am convinced that the sequence is not a mere chance. I have been equally impressed by the absence not only of cancer, but of all the other direct and indirect results of stasis as we see them in civilisation in such communities as do not suffer from chronic intestinal stasis.

Treatment.

The principles governing the treatment which I now adopt in these several conditions differ in no detail from those I formulated 25 years ago.

In the milder cases of obstruction the lubrication of the canal and the consequent softening of the intestinal contents by the free use of paraffin on the principle of the flushing tank are sufficient to meet the disability resulting from a moderate degree of obstruction. Suitable diet, kaolin and belladonna are most helpful adjuvants in that they control the spasm of the inflamed bowel and help to reduce the infection of the food-supply.

In more marked obstruction the freeing of the anchored bowel by the careful separation from it and from its mesentery of the evolutionary bands, and the accurate covering by peritoneum of any raw surface which may be left as the result of such separation, restore the structure and mobility of this portion of the bowel to the condition which existed at birth and permits of the free passage of material through the liberated loop. The results of such a simple proceeding is very often extraordinarily striking, the sufferer being frequently restored to health and to the full enjoyment of life with wonderful rapidity.

In most cases this procedure can be effected if the surgeon is perfectly familiar with the arrangement of the bands, but in a certain proportion, owing to the extent of the acquired adhesions, it is difficult and in some few instances impossible to cover accurately any remaining raw area by peritoneum. When this is the case the bowel is very liable to become fixed again by inflammatory adhesions to the floor of the iliac fossa, and in consequence does not function properly.

When the obstruction to the passage of the intestinal contents is not due to acquired bands, but to an extreme elongation of the lower segment of the bowel, such disability can only be met by dividing the ileum and introducing it into the side of the pelvic colon or by means of a colectomy. As the elongation and prolapse of the rest of the gastro-intestinal tract occurs in the feeble subject and is consequent upon the obstruction in the end of the drainage scheme formed by the very elongated and tortuous termination, to hope to remedy this condition of so-called visceroptosis by sewing up the prolapsed and dilated viscera is obviously futile, since the elongation of the pelvic colon which is the cause of the accumulation of material with its consequences must remain. I do not propose to discuss here the treatment of the ulceration of the gastro-intestinal tract and the other conditions which result from the presence of the first and last kink, but wish merely to call your attention to the enormous importance of recognising the causal relationship of all the troubles in the proximal bowel and of the deadly and far-reaching results of the intestinal auto-intoxication necessarily associated with it.

In order to obviate the development of the changes I have described, the public must be taught the necessity of evacuating the large bowel three times a day. In the first instance, this can only be secured by correct diet and suitable exercise. When the condition of obstruction already exists artificial means must be employed in addition to diet, &c.

The time has come when the medical profession must study the whole question of chronic intestinal stasis thoroughly, and realising its importance must endeavour by educating the people in proper habits and diet to obviate this acquired state which may almost be regarded as the normal in civilisation.

In view of the generally acknowledged steady increase in the disease and death-rate produced directly and indirectly by stasis, I feel I cannot urge you too strongly to take the matter in hand in earnest and with the least possible delay.

NEW DISEASES FOR OLD.

BY SIR THOMAS HORDER, BART., M.D., F.R.C.P.

DISEASES have their natural histories just as races of men and of animals have theirs, and to note the rise and fall, and how the characters change from time to time, is an interesting study. No doubt a study fraught with possible practical value also, though the difficulties of the investigation are great. So great indeed that before we can hope to arrive at any helpful conclusions we shall have been compelled to steer between the rocks of so many fallacies that when we emerge it is rather uncertain if we are still pursuing a useful course. These fallacies are much more marked in relation to the diseases to which I am going to make reference to-day than they are in relation to some others of a simpler kind, concerning which the facts collected by the Ministry of Health cover most, if not all, of the questions at issue. There is the fallacy of altered nomenclature. There is the larger fallacy of the more accurate diagnosis that comes with added knowledge and more exact methods. And there are other fallacies.

It is not my purpose to deal with my subject statistically. I have therefore not availed myself of the ready help that is always afforded to any student working along these lines by my friend Sir George Newman. Nor shall I deal with diseases which are mainly epidemic and endemic in their incidence. For here, in spite of the researches of the epidemiologists, we are at present very much on the knees of the gods, who give us, it is true, new lamps for old, but do not always benefit us thereby; cholera and typhus have gone, small-pox is going, but influenza and encephalitis have appeared and are still hovering near in no decadent fashion.

I am going to content myself by a few references to some common diseases concerning which I have seen conspicuous changes during the past 25 years, and ask you to consider with me what these changes may mean and what lessons we can possibly learn from them. It does not follow, of course, that you have seen similar changes in your country; if not, so much the more chance is there of our discovering the causes, since we may strike certain differential factors that will go far to explain them.

I.—Certain diseases have become much less common; in some of these the explanation is not difficult to find, in others it is not easy. The fall in the incidence of such diseases as diphtheria, typhoid fever, erysipelas, hydrophobia, anthrax, and glanders—to name a few only in this group—is doubtless a testimony to the ceaseless energy of the Ministry of Health and of its army of medical officers. The comparative rarity of lead poisoning and of several other industrial diseases may be reasonably attributed to the sound operation of the Factory Acts. It is fair to assume that the infrequent appearance nowadays of hydatid disease and of some allied parasitic conditions is the result of greater cleanliness in the preparation of foodstuffs for the market and more thorough inspection at the large centres of distribution.

There are some diseases whose relative infrequency to-day may be attributed to a betterment of the general conditions of life and changes for good in the habits of the people. Some forms of tuberculosis come into this category and rickets in all probability also. It has been suggested that the disappearance of chlorosis both from the out-patient rooms of the hospitals and from private practice is explicable in the same way, though here we must exercise caution lest we omit some unknown factor, seeing that we were never very certain of the main ætiological elements in this condition when it was a very common disease. Acute articular gout seems to be much less frequent now than formerly, though whether this is due to our drinking less alcohol, or to drinking different alcoholic beverages from our fathers, is not clear. Writing as late as 1920, McCrae states that gout appeared to be on the increase in the United States, but perhaps the last Amendment to the Constitution had not yet had time to assert a beneficent influence in this matter.

II.—Turning to the opposite side of the picture, we find very rife amongst us a series of disease-processes which lack the precision of some of those which I have just named, and for this very reason are all the more baffling when we come to consider their complex ætiology. I say complex because that seems to me the one clear fact about them when we regard them from the viewpoint of pathogenesis. In this sense they resemble our modern life itself, the dominant note of which, if it have one, is surely complexity. A feature that is common to all of them is the large element of functional disturbance that characterises them. In this series there come to be mentioned neurasthenia in all its forms; arterial hypertension with arterio-sclerosis in close attendance; enteroptosis; functional heart affections, with myocardial defects as accompaniments or sequels; hyperthyroidism and other endocrine disturbances; and in this same group we may place diabetes, since there is little doubt as to the definite increase in the incidence of this disease.

It may be urged that the reason why these names bulk more prominently in our nosological tables to-day than formerly is because our means of diagnosing them are better than they were a quarter of a century ago. But seeing that acceptance of this view of things means an acknowledgment that our own teachers were less astute clinicians than we ourselves are, I and any who were as fortunate as I was in this respect can scarcely subscribe to it. The more carefully we read the writings of the masters who immediately preceded us, and the more we recollect their words, the more certain it becomes that they were observers much too keen to miss these clinical pictures had they presented themselves with that frequency with which we see them to-day.

III.—And now I want to consider briefly another and quite different group of diseases in which, as it seems to me, changes have taken place over the period which I am considering. I refer to certain common diseases in which the factor of pyogenetic microbic infection is prominent. I spoke just now of the fall in incidence of typhoid fever and of erysipelas amongst other acute infections. These two diseases are caused by highly pathogenic members of the coliform and streptococcal groups of microbes respectively. At the same time that these particular infections have decreased there has been a notable increase in infections due to less pathogenic members of the same two groups of organisms. In the case of the coliform group we have watched the appearance of paratyphoid infections and, what is more significant, we have seen a large increase in infections due to colon bacilli or lactose-fermenting members of the coliform group. Many of these cases are subacute, and many are chronic. Infections of the urinary tract and of the gall-bladder have become very common. Of late years there are reasons to think that some bacteriæmias and diffuse intestinal infections, closely simulating paratyphoid, have been due to the colon bacillus, since expert bacteriologists have failed to obtain any other organism in the cultures from these cases or any serological evidence of typhoid or paratyphoid infection.

In the case of the streptococcus group of organisms a similar and no less striking change has been observed. The incidence of infections by *S. pyogenes* vel *hæmolyticus*, such as erysipelas, puerperal septicæmia, &c., has diminished. But we have in place of these a large increase in infections by the salivary and fæcal types of streptococci—i.e., *S. viridans*, many of them subacute and many of them chronic. The increase in the cases of bacterial endocarditis, nearly all of them subacute and associated with these feebly pathogenic strains of streptococci, is a notable example. Then there is the large group of cases of what we conveniently term "focal sepsis," chronic infections for the most part of the periodontal membrane, the tonsils, the nasal sinuses, the respiratory and digestive tracts; most of these are due to these same saprophytic strains of streptococci. These cases have become a conspicuous feature in modern medicine. Even if we admit the possibility of our more expert methods of clinico-pathological diagnosis being responsible for many individual cases in this class, this does not account for the fact that the anatomical lesions, and the clinical pictures, were not observed with nearly the same frequency 20 years ago. Nor have there been any considerable changes in bacteriological technique in this connexion during the past 15 years.

IV.—It is interesting to speculate as to the meaning of this fall in incidence of the more highly pathogenic infections and the rise in incidence of infections caused by organisms more closely allied to, or actually identical with, the saprophytic organisms of the body. If we define a microbic disease as being the sum-total of the changes produced by the interaction of an infecting microbe and the body tissues we can co-relate these changes with differing grades of virulence on the part of the microbe and with differing degrees of resistance on the part of the tissues. And it has become the custom to speak of comparative degrees of virulence of the organism and of comparative degrees of resistance of the host as the basis of any discussion of the varying course taken by diseases of microbic origin. Nor have we any more helpful hypothesis at present. Now there is no evidence for regarding the fall in incidence of the more pathogenic infections as being due to an increase in resistance on the part of the host; the evidence all goes to show that the fall has been due to those preventive measures already referred to. Nor is there any evidence for considering the increase in focal sepsis and in subinfections generally as being due to an increase in the virulence of the causative organisms; the streptococci obtained by blood culture in cases of septic endocarditis, for example, do not kill mice—a recognised test of pathogenicity in the case of streptococci. It follows, therefore, that we have good reason to regard these saprophytic infections as resulting from lowered tissue resistance. The question arises: Are we becoming more and more the prey to our own saprophytes? And if so, why? To the first question

I incline to answer, Yes. To the second question I have no answer, and yet I would like to suggest a possible answer.

Looked at from the viewpoint of disease, the conditions of modern life have probably in every respect save one tended to eliminate diseases or to render diseases less harmful. But this exception is a very significant one; the nervous and emotional strain of living has undergone a very great increase during the past two decades, and I cannot help feeling that it is perhaps in this direction we must look for the explanation of the facts I have stated, if facts they be. Consideration of exactly how it transpires that nerve strain tends so to lower tissue resistance as to render the body more prone to subinfection by saprophytic organisms and cause these infections to persist would cause me seriously to transgress the time at my disposal. But there is one point I should like to mention. Lowered resistance to microbic infection is usually regarded as being due to an ill-defined change in the patient's general state, for which we use rather meaningless expressions such as being "run down." The question I wish to raise is whether the central nervous system may not have some more definite and direct bearing upon infection, or rather upon immunity, than has hitherto been thought likely. The function of immunity is one of enormous value in the preservation of health and of life; its mechanism is also, as we know, one of a very elaborate kind. Is it not improbable that so vital and so complex a function as the protection of the body from microbic invasion and conquest should have been left, in the course of evolution of nerve control, without appropriate provision, even if it have not, as have so many other important functions, its special "nerve centre"?

Be this as it may—and the problem must be left pending exact observation and experiment—I do suggest that the influence of the nervous system upon the way we receive and respond to bacterial infection has been too little regarded, and should receive more attention.

I think that our experience of those few tense years of the Great War confirms the view that nerve stress and strain constitute a serious ætiological factor in the prevalence of microbic subinfections. For this period was followed directly, not only by a large number of cases of neurasthenia, of endocrine disturbances, and of cardiac derangements, but also by a great many cases of infection of the type we are accustomed to associate with lowered resistance. There were the cases of pulmonary tuberculosis of an insidious and smouldering type which we had not previously seen in any numbers. More pertinent to my previous remarks, there were a considerable number of cases of insidious endocardial infection by streptococci of a low grade of pathogenicity. These cases have been under very skilled observation during the past decade. In a good many of the patients the aortic cusps were infected and yet there has been no evidence of previous damage by rheumatism, syphilis, gonorrhœa, or even trench fever. But for the knowledge that these men had undergone a period of intense nerve strain we should be wholly without an adequate explanation of their slow submission to invasion by the saprophytic cocci of their own mouth or intestine. And do not the conditions which constituted a factor in pathogenesis of great importance during those few fateful years give us a clue to the problem of which I have been speaking? Did not the war achieve in a concentrated fashion what the conditions of twentieth-century life are tending to achieve, more slowly, but with equal surety, in those in whom the direct strain of war service has not operated?

If there be any truth in all this, what is the line that therapeusis should take in regard to these morbid processes? The answer seems unavoidable: That we must concentrate more upon the means of raising general resistance and especially of raising nerve tone. Perhaps we are still focusing our efforts too much upon the bacteriological part of the problem; I incline to think that we are. The response to specific inoculation, for example, in many of the cases of subinfection of which I have been speaking, *pace* certain immunisators who still retain their enthusiasm, is certainly disappointing. To instance the type-case once more: No amount of bacterio-therapy, however carefully devised and ingeniously carried out, has thus far served to change the dogged course of infective endocarditis, nor to avert the almost certain tissue. Nor does chemo-therapy to-day offer any better hope. Indeed, if we treat these patients on much the same lines as we have for many years now been treating patients suffering from pulmonary tuberculosis, give them open air by day and by night, sunlight, ample and good food, and general tonic measures—aiming by non-specific means to raise their general resistance—the response, meagre though it still is, is on the whole better than is obtained by the most up-to-date programme of bacterio-therapy. But it is clearly in the realm of prophylaxis that we must work if we want to get results, rather than in that of curative treatment, though less lethal diseases than the one just cited, but also illustrating the same point, give us better opportunities of help in regard to curative measures also.

On the basis of these remarks, whether we consider the group of modern diseases of functional type to which I made earlier reference, or whether we regard these cases of microbic subinfection with which I have dealt rather more fully, the moral is one and the same; we ought to do our best to induce our patients to return to a simpler life. We must not only point out more and more clearly and insistently the importance of hygienic rules for the conduct of the bodily functions, but in the sphere of the intellect, and especially of the emotions, we must preach moderation and simplicity. It is difficult for any clear-thinking doctor to avoid the conclusion that the hustle of modern life, the pace at which we go, the nerve strain involved, and the expense of spirit entailed, have become a large factor in the incidence of disease, and of diseases of a different type from many with which we were formerly acquainted. We have new diseases for old, but the doctor's function remains the same: to study closely his patient and to husband and to exploit to the best end all his resources. As a fellow student and as a colleague, I offer you these few remarks for your indulgent criticism.

ADDISON'S ANÆMIA AND SUBACUTE COMBINED DEGENERATION OF THE SPINAL CORD.

By Arthur F. Hurst, M.D.

Those of us who have the good fortune to be attached to one of the older hospitals of London have the inestimable advantage of doing our daily work in surroundings hallowed by a great tradition. There would be something lacking in the imagination of a man who is not stimulated by working in a hospital like Guy's, in which Astley Cooper and Hodgkin, Addison and Bright, Gull and Wilks, have made their epoch-making discoveries. I like to think that it is the spirit of Thomas Addison still pervading the hospital in which he laboured a century ago that has urged successive generations of Guy's physicians to interest themselves particularly in the disease of the suprarenal glands which bears his name, and in the form of anæmia, badly called pernicious, which he was the first to describe.

During the 18 years I have been on the staff of Guy's Hospital my male beds have been in the ward named after this great physician. It seems to me appropriate that in the short time at my disposal to-day I should give you a summary of the investigations carried out during the past five years by my colleagues and myself on Addisonian anæmia and the spinal degeneration with which it is so often associated.

In 85 per cent. of cases of Addison's anæmia symptoms or signs of nervous disorders develop, and the changes in the spinal cord upon which they depend are identical with those present in subacute combined degeneration. In the latter disease evidence of Addison's anæmia is always present sooner or later, and there can be no doubt that the anæmia and spinal cord degeneration are simply manifestations of the same infection.

This infection begins in the mouth in the form of pyorrhœa or some other streptococcal condition. Normally the free hydrochloric acid of the gastric juice makes a very efficient antiseptic barrier, which prevents bacteria, and especially streptococci, which reach the stomach from the mouth from gaining access to the duodenum. In every case of Addison's anæmia complete achlorhydria is present, and we have found that the same is true in subacute combined degeneration of the cord. This achlorhydria is an essential predisposing factor; it is not a result of the disease, as in several cases it is known to have existed ten or more years before the onset of the anæmia. It is generally constitutional in origin and often familial, thus explaining why Addison's anæmia may occur in several members of a family or subacute combined degeneration in one and Addison's anæmia in others. It is occasionally acquired, as in the cases which follow the alcoholic gastritis associated with cirrhosis of the liver, and the acute cases both of true Addison's anæmia and of subacute combined degeneration which follow the achylia caused by a growth of the stomach or the artificial achlorhydria following gastro-enterostomy or total gastrectomy.

My colleague, F. A. Knott, has isolated a hæmolytic streptococcus from the duodenal contents in a large number of cases of Addison's anæmia and combined degeneration of the cord, but it is very rarely found in any other condition, even if achlorhydria is present. Addison's anæmia and subacute combined degeneration are caused by a streptococcus which has invaded the small intestine from the mouth owing to the absence of free hydrochloric acid from the stomach and which has, in course of time, acquired certain specific characters. These are the production of blood and nerve toxins. The former leads to hæmolysis and at the same time acts on the bone-marrow, causing it to produce a large type of red cell which is found in no other condition except sprue and Bothriocephalus infection.

The neurotoxin causes subacute degeneration of the lateral and posterior columns of the spinal cords. In some cases the blood poison is produced alone; more commonly neurotoxin is also produced. In other cases the neurotoxin is predominant, and the patient complains of tingling in his feet and hands, and later of ataxic paraplegia, the anæmic symptoms being comparatively slight or only developing at a later stage. But even if no anæmia is present, and the hæmoglobin percentage is 100 or more, the characteristic megalocytosis is present.

The treatment of Addison's anæmia and subacute combined degeneration will become really satisfactory when the earliest manifestations are more frequently recognised. Thus, if the blood is examined for megalocytosis in every case in which achlorhydria is discovered during the routine examination of a patient suffering from digestive disorder, and when, in addition, a test-meal is given to patients with a characteristic sore tongue, or the paræsthesia, which is the earliest symptom of subacute combined degeneration of the cord, Addison's anæmia will be diagnosed before any anæmia has developed, and with adequate treatment its development will be prevented.

Every trace of oral sepsis should be eradicated, but this must be done slowly and only after preliminary vaccination, as otherwise a large dose of toxin is set free and absorbed locally, and may give rise to severe hæmolytic or neurotoxic crises. Hydrochloric acid is given in large doses. We find that 2 dr. three times a day are required; each dose is given in 8 to 10 oz. of water, to which the juice of an orange and some sugar are added to make a palatable drink. The first dose is taken fasting an hour before breakfast, when there is no alkaline food which can partially neutralise it; the others are taken as a beverage at lunch and dinner.

A culture of *B. acidophilus* is given three times a day apart from meals, and a tablespoonful of charcoal morning and evening. An autogenous vaccine, prepared from the hæmolytic streptococcus isolated from the duodenal contents, is injected in increasing doses. In intractable cases splenectomy may help to overcome the infection. The anæmia itself can be treated by arsenic, and, when necessary, by repeated transfusion, and the spinal symptoms by exercises.

It is futile to compare the relative merits of hydrochloric acid, arsenic, transfusion, and splenectomy in the treatment of Addison's anæmia. Each has its use. It is only by a combined attack on the infection and on the results of the toxæmia that the best results can be obtained. It should be remembered that the patient has permanent achylia, and is thus in permanent danger of reinfection and consequent relapse. He should, therefore, continue with his acid for the rest of his life, however well he may be, and he should have his hæmoglobin percentage estimated every six months. If it ever shows signs of falling, another thorough search for sources of infection in the mouth or throat should be undertaken, and active antiseptic treatment of the intestine should again be given.

By means such as these we may, I think, legitimately hope that the prognosis in Addison's anæmia, which has so long been regarded as invariably hopeless, will no longer justify the term pernicious.

WEDNESDAY, JUNE 3RD.

SOME ASPECTS OF RENAL DISEASE.

BY PROF. H. MACLEAN, M.D., D.Sc., M.R.C.P.

SINCE the advent of biochemical methods designed to test the efficiency of the kidneys, our knowledge of renal disease has been considerably extended. Though much yet remains to be done in elucidating the ætiology and progress of various pathological renal conditions, it is now clear that, in the main, the subacute and chronic affections of the kidney may be divided into two great groups. In the first group the predominating feature is œdema—indeed, it may be the only apparent symptom. This œdema is frequently very extensive, and its general intensity and distribution at once point to the condition as one of *subacute hydræmic nephritis*. In such patients the urine, without exception, always contains a very large amount of protein. Indeed, œdema associated with a urine containing only a very small amount of protein generally has its source in some other organ than the kidney. In hydræmic nephritis of the pure type the only difficulty on the part of the kidney seems to be the excretion of salt and water; waste products are eliminated as readily as in health. Unfortunately, however, hydræmic nephritis tends frequently to progress towards a phase characterised by retention of waste products as well as œdema. At this stage the condition is practically the same as that found in *chronic interstitial nephritis*. The fact that hydræmic nephritis has such a marked tendency to pass on to what is practically the same condition as chronic interstitial nephritis is one of the main reasons why the text-book treatment of renal diseases is rather obscure, especially as regards classification. Sometimes hydræmic nephritis (the chronic parenchymatous nephritis of the text-books) is described more or less as if it were interstitial nephritis with œdema added on. If we remember that a true hydræmic nephritis tends to pass into a stage in which the symptoms ultimately become the same as those associated with chronic interstitial nephritis, it is obvious that the exact symptoms present at any given time will depend entirely on the progress of the disease towards the chronic interstitial state at that particular time. A case beginning with typical hydræmic nephritis, and without any of the symptoms associated with chronic interstitial disease, may in a few months show all the symptoms (retention of nitrogenous waste products, excretion of a urine of low specific gravity, cardiovascular and eye changes, &c.) usually taken as characteristic of the chronic disease.

Diagnosis and Prognosis in Nephritis.

Hydræmic nephritis requires no skill in diagnosis; the extreme grade of œdema and ascites suggest an examination of the urine. Protein is found to be present in *very large amount* and granular and hyaline casts are also abundant. Though the diagnosis is easy, prognosis is extremely difficult, for though many of the cases recover, a large number, on the other hand, progress more or less rapidly to death by uræmia. The ultimate result in any such case depends on the nature of the primary lesion. When this is represented by a degeneration of the kidney cell and no definite inflammatory processes are present, the outlook is generally good. Unfortunately, it is impossible to say, in the light of our present knowledge, whether or not inflammation is present in the renal substance, and so prognosis must be based on other factors. A slight increase in blood pressure, especially in diastolic blood pressure, is a suggestive omen. The clinical condition, however, frequently affords little or no clue to the real state of matters, and it not infrequently happens that the use of renal tests show the outlook to be hopeless when the general condition and symptoms of the patient might appear to indicate quite satisfactory progress. This is especially the case at a certain stage of the transition from the hydræmic or water-logged phase to the phase of definite interstitial nephritis. At this stage the œdema frequently disappears, and the interstitial changes, being yet in their early stages, produce but little in the way of obvious symptom. The patient feels well, and, cheered by the disappearance of fluid from the tissue, the medical attendant may take a hopeful view. Often later events will prove that this view was totally unjustified, but no evidence to the contrary is offered by the clinicial symptoms alone. Renal tests, however, such as those about to be described, will always give the desired information. It cannot be too strongly emphasised that this information can be obtained only by testing the efficiency of the kidney, and the practitioner who relies on general examination of the patient in such cases, to the exclusion of the more useful renal tests, will be very frequently disappointed.

In chronic interstitial nephritis again, it is a notorious fact that the patient may have no objective symptoms and yet be on the verge of coma. He may not even have albuminuria to give a hint of the condition. It is by no means uncommon, on the other hand, to see a patient who for some time has been losing weight, but in whom physical examination fails to detect any real cause for his condition. Frequently, such patients are diagnosed as suffering from tuberculosis, more especially if a slight degree of bronchitis is present, but no tubercle bacilli are found in the sputum. Many of these patients, when examined by renal tests, show quite definitely the presence of severe inefficiency of the kidneys; in short, the condition is frequently one of chronic nephritis. Without renal tests it would, in such cases, be quite impossible to diagnose the condition by the usual physical examination. A patient whom I saw recently had just spent six months in a sanatorium under the impression that her general ill-health was due to tuberculosis. The real nature of the condition was at once elicited by tests of renal efficiency. Three weeks later she died in uræmia. It is probably not yet recognised by the medical profession at large that many ailing patients complaining of general weakness and lack of energy, but without symptoms pointing to any definite disease, are frequently the victims of renal deficiency. Many such cases have come under my notice.

While it is true that the first, and, in general, most important function of the medical man is to examine his patient very thoroughly by the simpler means at his disposal, and to exhaust this examination before applying laboratory tests, it is equally true that the stickler for "physical signs" alone, who is always decrying laboratory methods, is frequently incapable of making a correct diagnosis in that large group of cases in which physical signs are either wanting or, if present at all, are ill-defined, unreliable, and erratic. In no group of diseases is this more true than in renal conditions. It may be said at once that in this group accurate diagnosis and prognosis are frequently quite impossible without the use of modern tests. Even when it is obvious that renal disease is present, the degree to which renal activity is involved can in many cases be ascertained only by biochemical tests.

Physiological Basis of Modern Renal Tests.

The functions of the kidney are of various kinds, but the chief function is the excretion of the waste products of metabolism. Since the chief end-products normally excreted by the kidney are urea, uric acid, and creatinin, it follows that any condition interfering with their excretion will result in an accumulation of these bodies in the blood. Of these products, urea is the one most easily estimated, and it is now the practice in all well-equipped hospitals to estimate the blood-urea content in suspected renal cases. Normally, the amount present varies a good deal according to age and other factors, but it must be emphasised that the usual figure of 40 mgr. urea per 100 c.cm. blood as an outside limit is frequently much too low in the case of elderly individuals. Indeed, it is not very unusual to get 50 or even 60 mgr. per 100 c.cm. blood in aged people in whom the kidneys are apparently quite efficient for their age.

On the whole, perhaps, too much attention is paid to blood-urea content in renal disease. Taken by itself the amount of blood-urea present, unless the amount is very excessive, may signify very little. The most important rule to remember is that the blood-urea may be high with quite efficient kidneys. This may be dependent on extrarenal causes which need not be discussed here. Consideration of the blood-urea alone tells us very little about renal efficiency. In every case, however, in which high blood-urea is dependent on extrarenal causes *the urine contains a high percentage of urea.* In other words, a high blood-urea, when associated with a high percentage of urea in urine, does not signify that the kidneys are diseased. *With defective kidneys a high blood-urea is always associated with a low concentration of urea in the urine.*

With the exception of the condition discussed under hydræmic nephritis, it would appear that in nephritis all the excretory functions of the kidney are, on the whole, more or less correspondingly decreased, so that the estimation of any one waste body in the blood gives a clue as to the general efficiency of the organ. The easiest body to estimate is urea, but in order that the result should be of value it is necessary to remember the points just discussed. A high blood-urea per se is not necessarily an indication of defective kidneys.

From the point of view of the general practitioner, an elaborate laboratory investigation of renal function is out of the question. He has neither time nor the practice in laboratory manipulation necessary for the attainment of reliable results. In the great majority of cases, fortunately, no elaborate investigation is necessary. I am well aware that in America and on the continent very elaborate investigations are frequently carried out on patients suffering from renal disease. The collection of specimens of urine at varying intervals after certain definite meals, with a view to ascertaining the amount of solids present in the different specimens, is one method much in vogue. Also, the various modifications of so-called water tests are extensively used. All these demand great care and attention both on the part of patient and doctor, and they are tedious to both. From time to time we have tried all these tests at St. Thomas's Hospital with the result that, in my opinion, no information whatever is to be derived from any of them beyond that which can be obtained by the simple *urea-concentration test*. This test can be carried out by any medical practitioner in a few minutes, and in the great majority of cases gives all the information that can be derived from the most elaborate methods. We have tested it in thousands of cases, and I may safely say that no information of any importance was ever afforded by any other test that was not equally well indicated by this simple one. The only other test that may sometimes be of value is the estimation of blood-urea.

Urea-Concentration Test.

This procedure is carried out as follows. The patient is told to abstain from fluid for 12 to 18 hours before the test. Generally, it is most convenient to have the test done in the morning; he is told to drink practically no fluid from lunch on the preceding day. The importance of abstaining from fluid is exceedingly great, for unless this is done the result may be misleading. When this simple precaution is taken, the test nearly always gives reliable results.

Supposing the patient has had no fluid for 14 hours and he appears for the test at 10 in the morning, the following represents the exact procedure.

10 A.M.—Patient empties his bladder. Specimen kept for analysis. Immediately afterwards he receives 15 g. of urea dissolved in 2 to 3 oz. of water.

11 A.M.—Patient empties his bladder. Specimen (labelled No. 1) kept for analysis.

12 noon.—Patient empties his bladder. Specimen (labelled No. 2) kept for analysis.

The test depends on the fact that in the absence of excessive fluid in the system, efficient kidneys will get rid of the ingested urea by passing a concentrated urine in which the percentage of urea will be high. Thus, a normal young adult will probably pass urine, containing 3 to 4 per cent. of urea or more, one hour after taking urea by mouth. On the other hand, the urine of a patient suffering from diseased kidneys may show a concentration of only 0·8 to 1 per cent. of urea or even less than this. Naturally, the exact figures found depend on various factors, but experience shows that, when tested in this way, an individual with fairly good kidneys will always pass a urine containing at least 2 per cent. urea.

Specimens of urine are taken at hourly intervals for two, or sometimes three hours, in order to avoid the possible results of the diuretic action of urea. Sometimes, in spite of the fact that little or no fluid has been taken for several hours beforehand, a comparatively large amount of urine is passed during the first hour after the ingestion of urea. This diuretic action of urea generally passes over within the first hour, so that the true concentrating power of the kidneys is frequently best indicated in the urine of the second or even third hour. The total amount of urine passed in one hour should not exceed 100 to 120 c.cm. If it is greater than this some allowance must be made, or the test must be repeated. It not infrequently happens that the specimen of urine passed by the patient immediately before taking the urea is highly concentrated as the result of abstention from liquid. If this is so, it is hardly necessary to proceed with any test, for it is obvious that the renal condition is good.

The very simplest modification of the urea test is therefore to get the patient to abstain from fluid for 14 to 20 hours, and to estimate the urea in the urine passed after this time. The actual estimation of urea can be done by the hypobromite method and requires only a few minutes. One of the most important points about the urea-concentration test is that the patient on receiving the necessary directions can carry it out in his own home. Done in this way it requires only about ten minutes altogether, as far as the medical man is concerned, and is therefore peculiarly suitable for the busy general practitioner.

This test, combined with examination of the urine for protein and such bodies as casts and red cells, will, in the great majority of cases, furnish very definite information as to the state of the renal function. In a few cases estimation of blood-urea is also helpful. In my experience, this simple method of procedure furnishes as much information from the clinical standpoint as it is possible to obtain by the more elaborate methods which take days if not weeks to carry out. It is so simple that no technical training in its application is required, and its more extensive use will undoubtedly render unnecessary many of the very elaborate methods at present in vogue.

ABSTRACT* OF REMARKS ON

GASTRO-JEJUNAL ULCER.

By A. J. WALTON, F.R.C.S.ENG.

Mr. A. J. Walton commenced by pointing out that although gastro-enterostomy has been performed for the treatment of gastric ulcers for nearly 15 years, doubt was still cast upon its value by the fear of a later onset of gastro-jejunal ulcer. Some surgeons thought this fear exaggerated, and others advocated more severe operations to avoid what they regarded as a common complication. This, he said, made accurate determination of its frequency necessary, and, quoting many authorities and their figures, he showed that among surgeons of wide experience there was remarkable unanimity in placing the frequency between 1 and 2 per cent. There had come under his own care 20 cases of gastro-jejunal ulcer, upon 11 of which he had operated himself, the figure being arrived at by careful following up. These 11 occurred in a total of 783 gastric and duodenal ulcers subjected to operation. In 631 of these the operation was simple gastro-enterostomy, from which the danger of ulcer formation following this operation might be estimated, he said, at 1·7 per cent. Of the 11 cases only one occurred after a lesser curve ulcer, the lesion being relatively much less uncommon after duodenal and pyloric ulcers. Referring to some results already published by himself, he concluded that the operation of gastro-enterostomy must not be condemned because so small a percentage of patients might be left with the dangerous complication.

The lecturer went on to consider points in the ætiology and pathology of the condition which suggested methods of prevention, and to discuss the alternative procedures of gastro-duodenostomy and partial gastrectomy, the important question whether these ulcers can occur after operations other than gastro-enterostomy, and the close relationship between the amount of acid in this gastric juice and the incidence of gastric and duodenal ulceration. Mr. Walton laid stress on the importance of following up cases which have been operated upon, stating that by careful records it is then possible to get evidence of the ulcers in their earlier stages and so to prevent perforation. He detailed certain points in his personal method of operating and submitted to the meeting the following conclusions:—

(1) Gastro-jejunal ulcer is a relatively rare complication of gastric and duodenal ulcer occurring in a little over 2 per cent. (2) Its frequency does not warrant the introduction of extensive operations for the treatment of the primary condition. (3) It is almost entirely limited to pyloric and duodenal ulcers. (4) It occurs almost wholly in the male sex, and is found in those cases in which the gastric acidity is high. (5) As a general rule it is found when the acidity after the primary gastro-enterostomy persists, this being possibly due to an anatomical variation in the distribution of the oxyntic cells in the stomach. (6) The symptoms of this complication, although slight at first, nearly always commence

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* Publication of the full address is reserved for a later issue.

immediately after the primary operation. (7) The frequency of the condition will probably be diminished by performing the anastomosis rather higher up than usual. (8) The treatment of the established condition should be by partial gastrectomy, which will be aided by placing the stoma rather more remote from the flexure than is usual at the first operation.

COMBATING VENEREAL DISEASE IN GREAT BRITAIN BY TREATMENT OF THE INFECTED.

BY COL. L. W. HARRISON, D.S.O., M.B., F.R.C.P.

[AFTER briefly sketching the history of the control of venereal diseases in England and Wales—the schemes of Scotland and Northern Ireland, he said, are on the same principle—the speaker continued :—]

In the accompanying table of statistics are a number of interesting facts from which one may gather some idea of those aspects of the scheme which are hopeful and those in which improvement is necessary The outstanding feature is the very great reduction in the number of new cases of syphilis which reported at the centres in 1924 as compared with the number in 1920, which was the peak year. As you see, in 1920 there were approximately 42,000 and in 1924 approximately 22,000.

Syphilis.

Section F of the table is an analysis of the cases of syphilis treated at St. Thomas's Hospital, showing that the average proportion of the new cases which were new infections was approximately 40 per cent. I judge from this that the centres treated approximately 17,000 new infections in 1920 and 9000 in 1924. Judging by the amount of arsenobenzol supplied to practitioners under the scheme, one would suggest that the treatment centres dealt with much more than half the cases, since the centres use more than five times as much arsenobenzol as is given to practitioners, and, altogether, I think it safe to say that the figures represent a true diminution in the number of persons who are being infected with syphilis. This impression is being strengthened by the experience of the clinics, at many of which the medical officers are commenting on the comparative rarity of cases of recent infection. Their work is mainly on cases of old-standing, who received little or no treatment before the establishment of the venereal diseases scheme and are now attending for late recurrences.

Dr. Douglas White has estimated that the army of syphilitics calculated by the Royal Commission to exist in England and Wales in 1914 must have been built up by increments of 50,000 fresh cases per annum during the preceding 33 years. It is impossible to believe that there are anything like this number of fresh infections a year now. When you consider also that before the establishment of the venereal diseases scheme the vast majority of the infected must have been left uncured and that to-day the proportion which received such thorough treatment that the serum reactions are left permanently negative is steadily increasing, it is reasonable to hope that, if an estimate of the number of syphilitics is taken 20 years hence it will disclose nothing like the proportion found by the Royal Commission. I will not go so far as to join the optimists in some other countries who boldly declare their belief that in ten years syphilis will practically have been eradicated, but I do think that in the diminution of syphilis alone we shall see results which will well justify the labour and expense of the venereal diseases scheme.

Gonorrhœa.

As to gonorrhœa, the figures are not striking. We estimate that there are about three infections with gonorrhœa to one with syphilis, and in my own centre I have found that, of the cases appearing for the first time, about 60 per cent. are instances of new infection. If this was true of all the new cases seen in the centres in 1920, about 24,000 new infections with gonorrhœa were treated at the centres and in 1924 about 19,000, while the proportion of new infections with syphilis to those with gonorrhœa which were treated at the centres in 1920 was as 1 to 1·4 and in 1924 1 to 2·1. Various factors may account for the difference in the two ratios, and it is impossible to say with any certainty if the decrease of approximately 9000 cases of gonorrhœa in 1924 as compared with 1920 was due to a diminution in the incidence of the disease or not. It is reasonable to suppose, however, that, thanks to propaganda, the general public now regards gonorrhœa much less lightly than it did, and, if this is the case, the 31,000 cases of 1924 represented a greater proportion of the infected than did the 42,000 of 1920. If this is true, the 1924 figures do mean a decrease in gonococcal infections.

The arrest in the spread of gonorrhœa by treatment is much more difficult than is that of syphilis, because there is no specific which will quickly render the patient non-infective, and success in this branch depends on the care with which the patient is treated in the late stages of the disease and the question of cure determined. More and more effort is being concentrated on this side of the question.

The number of centres providing facilities for intermediate treatment of gonorrhœa at hours which are convenient to patients is increasing steadily. By intermediate treatment we mean such treatment ordered by the doctor which can be given by, or under the supervision of, an attendant. For example, irrigation of males suffering from gonorrhœa and vaginal and cervical treatment of females. Also much more pains are now being taken by medical officers to make sure that the patient is really rid of infection than when the scheme was started. As the quality of the scheme improves so does the attendance of the patients, and although the new cases have decreased by approximately 33,000, or 30 per cent., attendances have increased by 156,901, or over 10 per cent.

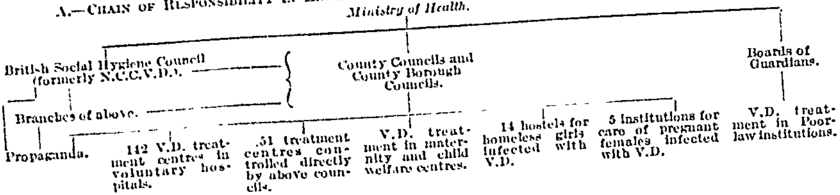
Attendance and Defaulting.

Closely connected with the question of the average number of attendances is the percentage of defaulters. It is customary with those anxious to point out the failure of free treatment to quote the percentage of defaulters shown in the annual reports of the Ministry of Health. To anyone intimately connected with the various treatment centres, as I am, and who sees the returns rendered by the centres, as I do, it is clear that the annual reports show the case in its worst light. For example, a patient with gonorrhœa who ceases attendance before completion of treatment is counted as a defaulter and would appear to be a person who is still infective. But in very many cases treatment has been continued long after all evidence of the presence of the gonococcus has disappeared, because of some persisting urethritis which seemed to be in all probability due to a secondary infection. It is unlikely that any but a very small proportion of these patients spread disease.

Often, too, patients who have been returned as defaulters turn up later and explain that they have been attending some other centre, and, in a word, the really bad defaulting, that is, of the kind which leads to spread of disease, is much less than appears from the statistics. In support, I will quote from the statistics of my own centre which, in 1924, dealt with a number of new cases equal to one-fifteenth of the new cases dealt with by all the treatment centres in England and Wales. I mark as having ceased attendance before completion of treatment all cases which at their last attendance had received any treatment, even though the record may have shown bacteriological reports which were negative for gonococci for many weeks.

A syphilitic who has not received a course of ten injections of arsenobenzol and ten of bismuth or mercury is similarly classed as having ceased attendance before receiving a course of treatment. My return for 1924 showed: Gonorrhœa cases which ceased attendance before completion of treatment, 13·02 per cent. of the cases of gonorrhœa. Syphilis cases which ceased attendance before receiving a course of treatment, 6·08 per cent. of all the cases of syphilis; and cases which ceased attendance after completion of one course but before all the treatment laid down in the programme for average cases (varying from 20 to 30 injections of each remedy, according to the nature of the case), 6·8 per cent. I doubt if those countries which have measures for searching out and punishing defaulters can show better results.

A.—CHAIN OF RESPONSIBILITY IN ENGLAND AND WALES (SCOTTISH SCHEME ON THE SAME PLAN).


Ministry of Health.
British Social Hygiene Council (formerly N.C.C.V.D.).
County Councils and County Borough Councils.
Boards of Guardians.
Branches of above.
Propaganda.
142 V.D. treatment centres in voluntary hospitals.
51 treatment centres controlled directly by above councils.
V.D. treatment in maternity and child welfare centres.
14 hostels for homeless girls infected with V.D.
5 institutions for care of pregnant females infected with V.D.
V.D. treatment in Poor-law institutions.

B.—WORK OF TREATMENT CENTRES: ENGLAND AND WALES.

Year.	New cases of—				Attendances.
	Syphilis.	Gonorrhœa.	Soft chancre.	Non-venereal.	
1920 ..	42,805	40,284	2442	19,654	1,488,514
1924 ..	22,010	31,272	1095	18,842	1,645,445

C.—PROPORTIONS OF FEMALES TO MALES.

Year.	Syphilis.	Gonorrhœa.	Soft chancre.	Non-venereal.
1920	1 to 2·1	1 to 2·1	1 to 25·8	1 to 0·8
1924	1 to 1·7	1 to 4·2	1 to 51·3	1 to 1·8

D.—PROPORTIONS OF SYPHILIS TO GONORRHŒA.

	Males.	Females.
1920	1 to 1·2 ..	1 to 1·2
1924	1 to 1·8 ..	1 to 0·7

Although the total attendances have increased, and, with them, the work of the centres, the cost of the scheme has steadily diminished until in 1923–24 the estimate was £90,000 less than in 1920–21. The cost now works out at less than 2½*d.* per head of the population.

Directions for Improvement.

I have said enough to show that the venereal diseases scheme in this country is effecting the purpose for which it was set up. Thanks to propaganda the public is daily becoming more aware of the evil effects of venereal diseases and of the importance of thorough treatment. The quality of the work in the treatment centres improves year by year so that the percentage of cases rendered non-infective increases, and we have reason for hope that in the next few years we shall see a change in the situation, which will be obvious even to the most sceptical.

The lines on which we are anxious to see a marked improvement are: Better facilities for the treatment of gonorrhœa and particularly for the intermediate treatment, that is, treatment which is carried out by or under the supervision of an attendant. It is daily, or almost daily, treatment, and to induce patients to avail themselves of it the hours at which it is available must be such as are most convenient to the patient.

Another line on which we hope to secure considerable improvement is in efforts to discover venereal disease in women and in methods of assuring their treatment. Often this must be carried out in some other place than at a treatment centre, and it is by no means always easy to arrange. Medical officers of health, however, are becoming more and more alive to the importance of this side of the question, and consequently more sympathetic to the idea of providing specially for the treatment of this class of patient.

E.—COSTS.

	£		£
1920–21	470,000	1922–23	390,000
1921–22	452,000	1923–24	380,000

Approximately 82 per cent. for treatment centres; 12 per cent. for laboratory work; 1·5 per cent. for arsenobenzol supplied to practitioners; 2 per cent. for propaganda; and 2·5 per cent. for other services.

F.—STAGES OF SYPHILIS IN WHICH PATIENTS REPORTED.

As illustrating the growing tendency of the public to seek advice early, the following figures may be quoted:—

At St. Thomas's Hospital.

	During five years ending December, 1922, out of 3005 cases of—	In the year ending April 30th, 1923, out of 601 new cases of—
Syphilis in males there were—		
Primary ..	21·3 per cent.	25·9 per cent.
Secondary	20·4 ,,	14·8 ,,
Later ..	58·3 ,,	59·3 ,,

I fear that practitioners, who are of all people the most likely to discover evidence indicative of venereal disease in their female patients, too often miss the chance of preventing further congenital syphilis in the families which they attend, by ignoring the suggestion conveyed by a series of stillbirths and miscarriages and neglecting to urge on such patients the importance of being examined and, if necessary, treated. To me it seems deplorable that so many instances should occur of a woman giving birth to one syphilitic child after another and nobody responsible for the medical care of that woman having taken the step which would almost certainly put an end to the miserable sequence.

Value of Propaganda.

Lastly, I would emphasise the importance of propaganda. Our difficulties are mainly bound up in the ignorance of the public. When they realise that no new *medical* discovery is necessary to put an end to venereal diseases and that all which is required is early and thorough treatment, we shall see the last of this scourge. It is not enough to leave the propaganda to societies. The word in season spoken by the individual goes far, and particularly so when it is spoken by the medical practitioner. The next generation of practitioners, who will be better educated in venereal disease than were their forbears, will speak the word, but why wait till then?

THE SPREAD OF CANCER OF THE RECTUM.

By W. Ernest Miles, F.R.C.S.

[After a brief description of the three clinical varieties of adeno-carcinoma, any of which might spread by direct extension through continuity of tissue, or by way of the venous or lymphatic systems, the speaker set out in some detail the anatomy of the lymphatics, in three groups, intramural, intermediary, and extramural. Dissemination by means of the extramural lymphatic system is more widespread and of much greater consequence than any other. The speaker continued:]

We may consider the extramural paths in three divisions, remembering that communications exist between them.

The Zone of Downward Spread.

The structures comprised in this zone are the perianal skin, the ischio-rectal fat, and the external sphincter muscle. Owing to the free intercommunication between the lymphatics of those structures and the efferents from the rectum, it is easy to understand how the progress of a detached cancer cell may be arrested at any point in that extensive network. It is also apparent that even an exhaustive microscopical examination of the structures abovementioned might fail to detect such isolated cancer cells. Nevertheless, the presence of minute masses of cancer cells has been revealed in microscopical sections often enough to establish the fact beyond doubt that these structures are liable to be invaded during the process of dissemination. Additional evidence upon this point is forthcoming from clinical records in regard to post-operative recurrent growths.

In eight of my early operation cases in which a restricted type of perineal excision had been performed for primary growths situated at a distance varying from half an inch to four inches above the anal margin, recurrence took place in the perianal skin. I have also met with 16 instances of recurrent growths involving the perianal skin following perineal excisions performed by other surgeons. The perianal skin, therefore, must be regarded as being liable to involvement even in cases where the primary growth is situated in the upper part of the ampulla or as high as the recto-sigmoidal junction, and should be widely removed in every case of excision of the rectum for cancer.

I have seen post-operative recurrence in the ischio-rectal fat on 31 occasions. Seven of these followed my own perineal excisions, one occurred after an abdomino-perineal operation, and 23 followed perineal excisions performed by other surgeons. In addition to this evidence of the liability of this tissue to invasion by cancer cells, the microscope revealed the presence of a minute metastasis in the ischio-rectal fat in a specimen which I removed by my abdomino-perineal method. I have seen recurrent growths involving the external sphincter muscle upon four occasions, once after one of my own resection operations, twice after similar operations performed by other surgeons, and once after an abdomino-anal operation.

The Lateral Zone of Spread.

This area embraces the structures, the lymphatics of which enter into relation with the extensive lymphatic network between the levatores ani and the pelvic fascia. These structures are the levatores ani and the coccygei, the pelvic peritoneum, the prostate gland, the base of the bladder, the cervix uteri, and the base of the left broad ligament and the internal iliac glands.

The levatores ani are sometimes the seat of metastases. I have encountered such in the substance of the muscle close to its attachment to the rectum and also near the origin from the pelvic wall during the performance of excision operations, both primary and secondary. In one of the specimens which I removed by the abdomino-perineal method two separate plaques of growth were found in the substance of the left levator. These muscles are exceedingly prone to invasion by cancer cells, which gain access to the extramural lymphatics before the deep infiltration of the primary growth has had time to penetrate the muscular coat of the bowel, and they should, in all cases, be completely removed when a cancerous rectum is excised. I have observed plaque deposits in the peritoneum of the pelvic floor upon so many occasions that it would not be an exaggeration to say that there is not a portion of it, from the middle line to the brim of the true pelvis, that has not been implicated. This is, no doubt, due to the fact that the peritoneum in this locality is in close relationship with the extensive lymphatic network situated between the levatores ani and the pelvic fascia. A metastatic deposit in this network, therefore, speedily penetrates the pelvic fascia and extends into the overlying pelvic peritoneum. Accordingly it is essential that the peritoneum of the entire pelvic floor, as far as the brim of the true pelvis on both sides, should be removed in every case of extirpation of the cancerous rectum in which immunity from recurrence is hoped for.

The Upward Zone of Spread.

The tissues of this zone are the retrorectal (lowermost mesocolic) glands, the pelvic mesocolon in its entirety, the paracolic glands, the glands situated at the bifurcation of the left common iliac artery, and the median lumbar (aortic) glands. Since the majority of the efferent lymphatics which from the intramural lymphatic system either pass through or terminate in the structures contained in this zone, it follows that these structures constitute the principal paths by which cancer cells spread from primary growths in the rectum. In fact, this is the most constant and, therefore, the most important of all the routes of spread. We find either macroscopic or microscopic metastases scattered throughout the zone in practically all cases of cancer of the rectum, even when the growth is in an early stage of development.

In some instances the retrorectal glands are obviously enlarged and can be readily felt, but, in the majority, though the fresh specimen is carefully palpated, it is extremely difficult to be certain whether the glands are enlarged or not. Nevertheless, when these specimens have been hardened and dissected, the involvement of the glands is evident. Moreover, microscopic examination of the glands always shows one or more of them to be invaded by cancer cells. It sometimes happens that a gland may be free from deposit, although the tissues surrounding it are definitely invaded by cells. In such a case, if the glands alone were examined and found to be free from invasion, an erroneous conclusion as to the absence of extramural spread might be arrived at and a more hopeful prognosis, in regard to the possibility of recurrence taking place in adjacent structures, might be given than would be warranted had a more thorough examination been made. I have seen also carcinomatous deposits in this group of glands in a case of cancer situated at the middle of the loop of the pelvic colon, thus illustrating downward spread from that locality. The pelvic mesocolon, throughout its extent, is particularly liable to invasion. So often, indeed, is it found to be the seat of metastatic deposit that the removal of the whole of this structure in every operable case of cancer of the rectum is just as important as is thorough clearance of the axilla in breast cancer.

The part of the pelvic mesocolon which is invariably invaded is its parietal border, between the layers of which the superior hæmorrhoidal and the inferior mesenteric vessels are situated. The efferent lymphatics from the retrorectal glands accompany these vessels on their way to the glands located at the bifurcation of the left common iliac artery; and constitute the principal route by which cancer cells from the rectum are carried by the lymph stream.

At any point along this line metastases may occur, either singly or in chains.

As a rule the metastases can be felt distinctly as a chain of nodules situated in the parietal border of the pelvic mesocolon, extending as far upwards as the promontory of the sacrum. Sometimes they are too small to be palpated, and may escape detection until the tissues have been hardened and subjected to a careful dissection. Quite recently I felt obliged to abandon an abdomino-perineal operation on account of a chain of palpable metastases extending upwards along the inferior mesenteric vessels as far as the origin of that artery from the aorta. In this case there were no other visible metastases, either in the pelvic peritoneum or in the pelvic mesocolon, the primary growth involving not more than a third of the circumference, and again indicating that distant extramural spread occurs during an early phase of the disease. There is scarcely a part of the pelvic mesocolon in which, from time to time, I have not observed metastatic deposits, so that the whole of the structure must be regarded as highly dangerous tissue.

The paracolic glands, which are in series with the ano-rectal glands and are situated along the mesenteric border of the pelvic colon, are often the seat of metastatic deposit. The involvement of these glands does not proceed from one to the other seriatim as might be expected, for a continuous chain of affected glands is never seen. When a paracolic gland is found to be involved it is generally isolated, and may be situated at a considerable distance from the level of the primary growth. It is not uncommon to find an infected gland, several inches above the rectal growth, with no evidence of involvement of others of the same group. Instead of spread taking place from one paracolic gland to another, it is probable that the cancer cells first follow the course of the lymphatics accompanying the inferior mesenteric vessels and then, owing to blockage of the normal lymph stream by metastatic deposits, grow continuously or are carried by reversed flow along the lymphatic vessels of the pelvic mesocolon towards the colon to be arrested in one of the paracolic glands. When, therefore, the rectum, together with part of the pelvic colon, has been removed by a perineal method of excision it is quite possible that an infected paracolic gland, above the level of the point of section of the bowel, may have been left behind, despite the fact that a careful examination of all the paracolic glands contained in the specimen has failed to demonstrate evidence of infection. Even the extensive removal of the pelvic colon by means of the abdomino-perineal operation may sometimes fail to include an infected paracolic gland when situated many inches above the level of the primary growth.

There is ample evidence, then, that the dissemination of cancer cells by means of the extramural lymphatic system is more widespread and of much greater consequence than that which takes place in the intramural lymphatics. Moreover, it appears that, of the three zones of possible extramural spread, the upper zone is the most important, because the secondary deposits are always present, visible to the naked eye, or discernible by the microscope. It occasionally happens that cancer cells are disseminated along the tissues of all three zones simultaneously. In one of my specimens the retrorectal glands were full of cancer cells, and in the pelvic mesocolon a large number of hyperplastic lymph-nodes existed along the course of the blood-vessels. Several of the paracolic glands were invaded by cancer cells. In the substance of the left levator ani muscle there were two nodes containing cancer cells, and a similarly infected node was found in the lymphatic plexus situated upon the upper surface of the muscle. In addition to these a minute metastasis was discovered in the ischio-rectal fat. This specimen is particularly interesting, because it illustrates invasion of the three zones of spread by a cancer which was still in such a clinically early stage of development that the direct extension of the primary growth through continuity of tissue had not involved the whole thickness of the wall of the bowel.

Conclusion.

As a result of (*a*) noting the position of metastases during the performance of operations; (*b*) observing the locality affected by recurrent growth either clinically or during the performance of secondary operations; (*c*) recording the extent and the position of metastases in cases in which proposed operations had been abandoned on account of their presence; (*d*) studying the post-mortem findings in regard to the spread of cancer in patients who had died from advanced and inoperable cancer; and (*e*) following the detailed examinations, macroscopic and microscopic, of specimens removed by operation, I have been able definitely to determine the tissues that are liable to metastatic deposit during the progress of the disease and to recurrence after restricted operations. These tissues are the ischio-rectal fat, the levatores ani muscles, the pelvic peritoneum, and the pelvic mesocolon, and they are directly concerned with the spread of cancer from the rectum. Pathology teaches us that they may be the seat of metastatic deposits even when the growth in the rectum is in a clinically early stage, and that unless these highly dangerous tissues are completely removed in every case in which an operation for the removal of the cancerous rectum is undertaken, post-operative recurrence will be a rule to which there will be few exceptions.

VISITS TO HOSPITALS.

The members of the Assembly started at 2 P.M. on Tuesday, Wednesday, and Thursday to visit the various London hospitals, at which representatives had been appointed to provide a programme illustrative of the work of the institution. Tea was provided at the hospitals from 4 to 4.30, at which hour in many cases the programme came to an end, though at some of the larger centres on one or other day a lecture was given at 5 P.M. The number of visitors for whom accommodation was provided by the representatives varied from 12 to 50 from day to day at each institution, as well as with the size of the institution, the average number being 30.

St. Bartholomew's Hospital.—June 2nd: A lecture on Medical Education was given by Sir Holburt Waring at 2 o'clock, after which there were demonstrations on the Treatment of Exophthalmic Goitre complicated by Auricular Fibrillation, by Prof. F. R. Fraser and Mr. T. P. Dunhill, and on Bone Injuries (lantern demonstration), by Sir Charles Gordon-Watson. At 5 P.M. Dr. N. S. Finzi gave an X ray demonstration. June 3rd: At 2 o'clock Dr. H. Morley Fletcher gave an address on the Physicians of St. Bartholomew's Hospital, after which Dr. M. Donaldson described the technique of the treatment of carcinoma of the cervix with radium, Dr. R. G. Canti giving a histological demonstration. A demonstration by Sir Bernard Spilsbury on Criminal Pathology and a lecture on the Treatment of Diabetes, by Dr. George Graham, closed the programme. On both days visitors were invited to be present at operations by the surgical staff.

London Hospital.—June 3rd: At 2 P.M. Mr. E. W. Morris gave a lecture on the history of the hospital of which he is house governor, after which there was a demonstration of cardiac cases by Dr. John Parkinson. Other subjects brought forward were Temporary Application of a Band in the Treatment of Irreducible Spiral Fracture of the Bones of the Leg, by Sir Hugh Rigby; Intracranial Birth Injuries, their Modes of Origin, Prevention and Results, by Mr. Eardley Holland, and Methods of Determining the Efficiency of the Metabolism of Carbohydrates, by Dr. O. Leyton. June 4th: After Mr. Morris had concluded the second part of his lecture Lord Dawson of Penn, Dr. Russell Andrews, and Dr. Cecil Wall gave demonstrations of cases. Other communications were: On the Diagnosis of Intracranial Aneurysm, by Dr. George Riddoch, and the Treatment of Acute Suppurative Arthritis, by Mr. James Driberg. As on Tuesday, visitors were invited to attend the operations by the surgical staff.

Westminster Hospital.—June 3rd: At 2 P.M. Sir James Purves-Stewart gave a lecture on Clinical Examination of Cerebro-Spinal Fluid, and after the visitors had witnessed a demonstration in the pathological laboratory Dr. de Souza lectured on Hormones in Disease. At the same time there was a lecture by Prof. Stanford Cade on Surgical Anæsthesia and a demonstration of the results of facial plastic surgery by Mr. G. C. Chubb. June 4th: At 2 P.M. a lantern lecture entitled a Pot-Pourri of Medicine was given by Mr. Hildred Carlill, and this was followed by demonstrations in the electrical and ophthalmic departments, after which Prof. Cade demonstrated the technique of regional anæsthesia and Mr. Rock Carling remedial exercises. Operations by the surgical staff were conducted each afternoon.

King's College Hospital.—June 2nd: At 2.30 P.M. a lecture on Breast Hyperplasia and its Relations to Malignant Disease was given by Sir Lenthal Cheatle, and various demonstrations took place at the same hour. At 3.15 P.M. there was a demonstration in the fracture clinic by Mr. St. J. D. Buxton. June 3rd: At 2 P.M. there was a series of general surgical as well as laryngological operations, and these were followed by a lecture on Coxa Vara, by Mr. H. A. T. Fairbank.

Charing Cross Hospital.—June 3rd: From 10 A.M. till 4 P.M. there was a series of operations and demonstrations by the staff. June 4th: A similar programme was provided from 2 P.M. to 4 P.M.

St. George's Hospital.—June 2nd: At 1 P.M. operations were performed by the staff. June 3rd: At 2 P.M. operations were continued, particularly on the nose, throat, and ear, and afterwards there was an exhibition of historical and other specimens by Dr. R. Donaldson. June 4th: At 1.30 P.M. there was a further series of operations.

Guy's Hospital.—June 2nd: From 2 P.M. to 4.30 P.M. there were demonstrations and operations by the staff with visits to the wards and the various departments of the hospital. Dr. C. P. Symonds conducted the neurological demonstrations, Dr. H. W. Barber the dermatological, and Dr. H. C. Cameron the pediatric. June 4th: At approximately the same hours a similar programme was provided.

St. Mary's Hospital.—June 2nd: At 2 P.M. a lecture was given by Sir William Willcox on the Investigation and Treatment of Cases of Arthritis, and later there were operations and demonstrations by the staff, Prof. F. Langmead giving a demonstration on Sanocrysin Treatment of Tuberculosis. June 4th: At 2 P.M. there was a lecture reviewing the Treatment of Exophthalmic Goitre with special reference to the Value of Measurements of the Basic Metabolic Rate, by Dr. C. M. Wilson, and at 5 P.M. a lecture on the Colon by Sir Arthur Keith. Between these two lectures operations were performed by the staff, and Sir Almroth Wright gave a pathological demonstration.

Middlesex Hospital.—June 2nd and June 3rd: At 2 P.M. and onwards there were operations and clinical demonstrations by the staff.

St. Thomas's Hospital.—June 2nd: At 2 P.M. there were operations and demonstrations, the nerve cases being demonstrated by Dr. Farquhar Buzzard. June 3rd: At 2 P.M. operations and demonstrations were continued, among the latter being Methods of Investigating Renal Patients, by Prof. H. MacLean. June 4th: At 2 P.M. general operations and operations on the throat were followed by demonstrations, a description of the Methods of Investigating Glycosuria and Diabetes being given by Prof. MacLean.

University College Hospital.—June 2nd: At 2 P.M. operations were performed, and at 2.30 P.M. Sir Thomas Lewis demonstrated in the cardiographic department. June 3rd: At 2 P.M. operations were followed by a demonstration of the Sanocrysin Treatment of Tuberculosis by Prof. T. R. Elliott. June 4th: At 2 P.M. there were further operations and demonstrations.

Royal Free Hospital.—June 3rd: From 9 A.M. to 3 P.M. there were demonstrations and operations by various members of the staff.

Prince of Wales's General Hospital.—June 2nd, 3rd, and 4th: At 2 P.M. demonstrations were given in the general and special departments.

West London Hospital.—June 2nd, 3rd, and 4th: At 2 P.M. there were demonstrations and operations by the staff.

London Temperance Hospital.—June 4th: From 1.45 P.M. operations were performed and demonstrations given by the staff and at 5.30 P.M. Mr. Herbert J. Paterson lectured on Cancer of the Stomach.

At the *London School of Hygiene and Tropical Medicine, St. Peter's Hospital for Stone*, the *National Heart Hospital*, the *Samaritan Free Hospital*, the *Chelsea Hospital for Women*, the *Royal London and Central London Ophthalmic Hospitals*, the *Hospital for Diseases of the Throat*, and the *Brompton Hospital for Consumption and Diseases of the Chest*, members of the staffs gave demonstrations on different days to illustrate the methods and practice of the institutions.

The authorities of the *Central London Throat, Nose, and Ear Hospital* gave a luncheon at the Carlton Hotel before the demonstrations and operations at the clinic, an example that was followed at the London Lock Hospital.

At *St. Mark's Hospital* a feature was made of demonstrations of barium enemata; at the *Cancer Hospital* Sir James Dundas-Grant lectured on Cancer of the Throat; demonstrations were also given at *St. John's Hospital for Diseases of the Skin.* At the *Radium Institute* demonstrations were given to the visitors in batches of four by Mr. Hayward Pinch and his staff.

At the *Hospital for Sick Children*, Great Ormond-street, ward clinics were held and demonstrations on selected medical, surgical, and dermatological cases given, and visitors were present at operations.

At the *Infants Hospital* Dr. Eric Pritchard dealt with the practical management of normal and complicated cases and lectured upon Artificial Feeding.

At the *National Hospital for the Paralysed and Epileptic* operations were performed and demonstrations given by the staff, and clinical lectures by Dr. F. M. R. Walshe and Dr. Hinds Howell.

Queen Charlotte's Hospital.—There were clinical visits to the wards and a pathological demonstration on Injuries to the Fœtal Skull, by Mr. L. G. Phillips.

COMMERCIAL EXHIBIT.

An exhibition of surgical instruments and medical products, organised by the Surgical Instrument Manufacturers Association, was held in the rooms of the Medical Society of London. The following firms exhibited surgical instruments: Messrs. Allen and Hanburys, Ltd., 37, Lombard-street, E.C. 3; Messrs. Arnold and Sons, Ltd., 50, Wigmore-street, W. 1; Messrs. Down Bros., Ltd., 21, St. Thomas's-street, S.E. 1; Messrs. J. Gardner and Son, 32, Forrest-road, Edinburgh; Messrs. Mayer and Phelps, 59, New Cavendish-street, W. 1; Messrs. Weiss and Son, Ltd., 287, Oxford-street, W. 1.

British chemical and medical products were shown by British Drug Houses, Ltd., Graham-street, City-road, N. 1: Crookes Laboratories, 22, Chenies-street, W.C. 1: Mr. W. H. Martindale, 10, New Cavendish-street, W. 1.

Sir John Bland-Sutton will open the enlarged building of the East Surrey Hospital at Redhill on Friday, June 19th, at 1.30 P.M.

THE BATEMAN APPEAL.

As already explained in THE LANCET, it has been felt that material assistance ought to be offered to Dr. Bateman to meet the legal expenses of his successful appeal and to make good the deficiency in his professional income. Accordingly the Bateman Fund has been opened and lists of contributions have appeared in recent issues. We have received additional contributions as follows:—

	£	s.	d.
Already received and acknowledged	458	4	0
G. W. Dawson, Esq.	2	2	0
M. S. Barfield	2	0	0
A. Graham-Stewart. (Third contribution.)	1	1	0
Anon.	1	1	0
Anonymous	1	0	0
H. E. Hargreaves	0	10	0
	465	18	0

Remittances should be forwarded to the Manager of THE LANCET, 423, Strand, W.C. 2, and made payable to the "Bateman Fund Account."

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

Mental Deficiency Bill.

ON Monday, May 25th, the Mental Deficiency Amendment Bill, a measure to amend Section 7 of the Mental Deficiency Act, 1913, for the purpose of enabling a defective to be removed from an institution for the purpose of being placed under guardianship, was read a third time. On Tuesday, May 26th, the Bill was read a first time in the House of Lords.

Whitsuntide Adjournment.

The House of Lords adjourned for Whitsuntide on Thursday, May 28th, until June 16th. The House of Commons adjourned on the same day until June 9th.

HOUSE OF COMMONS.

TUESDAY, MAY 26TH.

THE PENSIONS MEDICAL SERVICES.

The House went into Committee of Supply on a vote of £11,020,000 for the salaries and expenses of the Ministry of Pensions, Mr. JAMES HOPE, Chairman of Committees, in the chair.

Major TRYON (Minister of Pensions) said that the estimated expenditure for the year 1925–26 amounted to £66,020,000, or the largest vote for any single department. It represented a decrease of about £2,858,000, or 4 per cent., on the expenditure of the previous year. The largest decrease was in the items of administration and medical expenses, which showed a total fall of 16 per cent. The cost of the medical treatment and services would, he estimated, amount to £2,847,000 for the year, compared with £3,550,000 last year. Medical treatment was naturally a declining quantity, because apart from chronic cases disabilities were inevitably and to an increasing extent reaching a condition of stability where normally no further treatment was likely to be wanted. The death-rate among disabled men remained fairly stationary at about 13 per 1000 annually, or about the same as the general population. With regard to the question of final awards, the right hon. gentleman said that the fixing of these awards did not necessarily mean that the man had wholly recovered from the injury or ailment, nor that he was in such a condition that there might not be some slight fluctuation up or down, but it did mean that a condition of normality had in medical judgment been reached. The Ministry took the very highest professional medical advice in regard to each kind of disablement before making final awards. A final award of 20 per cent. or over carried a life pension at the rate fixed. In dealing with many hundreds of thousands of cases a mistake here and there must occur, and he had taken steps to correct such cases of error. A man who found that he was worse would naturally apply for medical treatment and that treatment became the medium through which error, if there was any, was disclosed. In medical language either the diagnosis of the case might have been seriously faulty, or the prognosis of the case might have been wrong. Where either of these errors was discovered and the case was seen to have involved a serious underestimate of the normal extent of the man's disablement as a permanent matter he was able to recommend the case for further compensation under special sanction.

Mr. F. O. ROBERTS (the Pensions Minister in the late Labour Government) moved to reduce the vote by £100. He said that there was a demand for a revision and consolidation of the existing pensions regulations and he thought a Select Committee would be able to deal with all the points in connexion with these subjects. He hoped that the Minister would be able to set up such a Committee.

Mr. IAN MACPHERSON said that during three years no less than £55,000,000 was spent in medical treatment. The taxpayer was entitled to expect a return for that large amount of money and the taxpayer expected to see a reduction in the cost of these services. He did not approve of the appointment of a Select Committee. It was not the proper body for an adventure of this kind, because it was admitted that it was only a question of 20 per cent. of doubtful cases. What was the Select Committee going to do? Was it going to select other doctors to decide these cases? Every single man on a Select Committee would be predisposed to a certain line of action.

Lieut.-Commander ASTBURY referred to criticisms of the Pensions Ministry administration which he had made at question time and said that those criticisms were based on a statement which had been made to him by a medical man of standing in the Ministry, and that if the Minister would give him a letter guaranteeing that no proceedings would be taken against the man for giving the information he would give all the help he could. The Minister did not see his way to give him that letter. Now, however, his hands were to a certain extent untied because since December last this medical man had received notice to terminate his engagement with the Ministry at the end of this month, and he would be perfectly prepared if his statements were challenged to come to the House and tell hon. Members the things which he was prepared to prove. This was the statement made to him by this medical man: "Although the late Ministry of Pensions have definitely stated that no medical officer who had not seen a case would be permitted to change the amount of the award, it is the practice in some regions, notably at Burton Court, and at Manchester, for the R.A.O. to send for an assessor who has failed to reduce the required percentage of assessments during the preceding week. If, after being warned, the assessor still fails to produce the required weekly quota of reduced assessments, his services are dispensed with. As all assessors are paid on a sessional basis, they may be quietly dropped by the R.A.O. or a week's notice will terminate their agreement."

Major COHEN said that the British Legion had 3000 cases of men who could not get any benefit at all. Their contention was that if a man got a final award of under 20 per cent. and then became worse he should be entitled to make an appeal on the strength of a medical certificate signed by a qualified practitioner or by two or three practitioners. The main point was that it should be a civilian practitioner, and not one of the Ministry's doctors. He had nothing to say against those doctors, but there was no doubt that a man looked after the interests of his master, and if he was working for the Ministry of Pensions a doctor was entitled to consider the Ministry, unconsciously perhaps, more than he considered the pensioner.

Lieut.-Colonel STANLEY (Parliamentary Secretary to the Ministry of Pensions), replying to Lieut.-Commander ASTBURY, said that it was impossible for the Minister to give the undertaking asked for in regard to this medical man. If he was a man of standing in the Ministry, and knew that something directly contrary to the instructions of the Ministry was being carried out by someone in the Ministry, then it was his duty to report the fact himself and to see that it was dealt with. If he did not do so he was obviously unfit to remain in his position. If, on the other hand, he made a statement against his colleagues which was incorrect, what would be the situation in the Ministry if he were continued in his position?

Lieut.-Commander ASTBURY said that his informant was a medical man who had served in the Ministry, and had been a member of the travelling board of the pensions appeal tribunal for the last three years.

Lieut.-Colonel STANLEY said the simple fact was that this man was not an official of the Ministry. The hon. Member would not tell them who he was, and so the Minister had been forced to make inquiries for himself in the North-West Region from the regional director and the regional awards officers, who strenuously denied that any such instructions had been issued, or that any such procedure had taken place. They went further and inquired from every one of the medical assessors, and every one of them strenuously denied it. Some of them made pungent remarks with regard to the speech of the hon. Member.

Lieut.-Commander ASTBURY said these assessors were sessional men, and their engagements with the Ministry could be terminated with one month's notice, and they dared not open their mouths because they had their livings to make.

Lieut.-Colonel Stanley said that was not the case. He was nearly as certain as he could be that no whole-time doctor under the Ministry got less than six months' notice. The Ministry were bound to accept the denials of these ten men.

Lieut.-Commander Astbury said that he would give the name of his informant now that he had been dismissed. He was Major Brasher, who was not only one of the most respected men, but one of the finest men who ever sat on a pensions appeal tribunal. The reason why he did not tell the hon. and gallant Member that he was a member of the pensions tribunal was because within a very short time they might have got to know who the man was who had given the information.

Medical Work of the Ministry.

Lieut.-Colonel Stanley said he could not understand why the hon. Member should object to the Ministry knowing when it was not one of their officials. Proceeding to deal with the medical side of the Ministry's work the hon. gentleman said it was one of the pivotal branches of the pensions administration. Broadly speaking, it divided itself into two essentially different types of work. The first was the medical treatment of war disabilities, and the second was the examination and certification of pensioners and claimants. The medical and surgical branch of the Ministry had been one of the most wonderful achievements of the war. The medical profession had to mobilise all its resources and all its skill to grapple with the many problems arising out of the war. The way in which the medical profession met that demand would always be a lasting memorial to their skill and science. The policy had taken two forms: on the one hand, the Ministry had to provide special methods, and sometimes entirely new ones, for the treatment of cases caused by the war, and rarely known among the civil population. Also they had to provide accommodation for ordinary cases, so that the man who had been injured in the war should not have to wait for treatment. There was in-patient treatment, mainly in hospitals provided, owned, and controlled by the Ministry itself, but partly also in hospitals provided by voluntary contributions, and to a less extent in the ordinary civil hospitals of the country. Alongside the hospital accommodation, the in-patient treatment, had been the out-patient provision at the clinics of the Ministry. At one time the Ministry had as many as 113 hospitals and 650 clinics, and at the time when they were instituted they were an entirely new feature of public medicine. As treatment inevitably was most needed in the case of wounds and injuries—he thought that something like four out of every ten were cases of wound or injury—it was seen at a very early date that there was overwhelming necessity for supplementing both the military and civil hospital accommodation for the treatment of men who had been discharged for injuries, and this treatment did not stop short, as it did so often in the case of civil hospitals, at operative or other immediate treatment, because the medical branch of the Ministry aimed at something further than that and decided to include the whole range of orthopædic treatment. That meant the establishment of massage and electrical treatment, and also the provision of curative workshops attached to the surgical hospitals at which the more severe cases by exercising the injured limb could recover as fully as possible the use of that limb. The Ministry were running, not in addition to their hospitals, but included in the 113 hospitals he had mentioned, 15 orthopædic hospitals of their own and 60 clinics at which supplementary orthopædic treatment was given. This class of case had on the whole yielded better results than almost any other. In the course of nature these numbers were diminishing, and at the present time the Ministry was operating eight hospitals for this purpose, and 14 clinics where massage and other forms of treatment were given.

One of the most difficult classes of case were the neurasthenia cases. As regards those men who had lost their reason, they had to be shut up in county asylums according to the law. But the State saw to it that they were treated as private patients. Although it had been argued that the Ministry should itself have supplied the asylums to which these men could have been sent, he thought that there were very cogent arguments against that course. In the first place, there was the difficulty of the sub-division of the hospitals, but a much stronger reason was that the relatives of the men strongly objected to them being removed to any distance from their homes. There was a good deal of confusion between what was called neurasthenia and mental disease. Successive Ministers of Pensions, on the advice of their medical experts inside and outside the Ministry, had paid special attention to cases of nervous and mental trouble, and no expense or pains had been spared to get a man back to the normal condition. But one of the things upon which the experts were, he thought, all agreed was that the best cure for any case like that was to get a man back to his normal life and occupation as soon as possible. The great danger was that they might turn a man unnecessarily into a case that had to be certified. The Ministry had had in the past 20 neurological hospitals and 48 clinics for this purpose. The difficulty was that the Ministry had to draw very largely on those members of the medical profession who had given special study to this particular disease, and in addition they had had to train a large number of specialists of their own in order to grapple with the cases. On the whole they had been very successful, and a large number of men had been taken in time and restored to their normal condition. On the other hand, they had some cases of very serious mental trouble and disorder. The Ministry went to extremes to prevent the necessity of certifying a man, and they had several establishments to deal with border-line cases. The largest one was at Ewell. They had two establishments for certified cases, one in the north and one in the south, where selected cases were sent by agreement with the medical officers of the Board of Control. It was early days to say whether the experiment was going to be a success or not, but certainly up to date it would not justify any considerable extension of its operation.

Treatment of Tuberculosis.

As regards tuberculosis, it had already been settled to deal with that question in conjunction with the Ministry of Health, and arrangements were made for training after a man had been through his ordinary course of sanatorium treatment. He feared that that had not been quite the success that it was hoped it would be. The Ministry had no power to retain a man against his will, but further efforts were being made in another direction in conjunction with the Ministry of Health and the Ministry of Labour to see that when a man was going to be discharged, after concluding his course of sanatorium treatment or training, the medical officer of health of the locality and the employment exchange manager were notified so that everything possible might be done to get the man a job, and, if necessary, some more suitable habitation. The Ministry were spending something like £2,000,000 a year on allowances to tuberculous men. As showing the tendency for the medical branch of the Ministry's work to decline the hon. gentleman said that the day census of March, 1922, gave 119,000 in-patients and out-patients. The day census of March, 1925, gave 40,600 cases only. The general policy had been to concentrate the men in the larger hospitals and to close the smaller ones. On the whole there was a reserve of from 10 to 15 per cent. in excess of the beds occupied at any time. The same applied to out-patient treatment. At the present time they had 505 clinics which practically served the purpose of the out-patient department of a hospital. In addition to general medical practitioners in attendance, there were also specialists and the Ministry still provided for home treatment. They had spent upwards of £60,000,000 in medical treatment alone, and there had been an average of 1,750,000 cases. He thought that was a very high achievement on the part of the medical branch of the Ministry.

Dr. Drummond Shiels hoped that the Government would accept the proposal for a select committee.

Major Tryon, replying to the debate, resisted the suggestion that a Select Committee should be set up to inquire into pensions administration, but promised that he and the Parliamentary Secretary would make a full inquiry into the whole question, and said they intended to make a tour of the country to see for themselves what was being done.

On a division, the motion to reduce the vote was defeated by 279 votes to 119.

Wednesday, May 27th.

Overlapping in Local Administration.

Mr. Sidney Webb moved:—"That, in view of the costly overlapping of services and duplication of establishments in the various branches of public provision for the children, the sick, the aged, and the unemployed able-bodied, and as a necessary preliminary to the much-needed revision of the grants in aid in relief of the burdens now pressing so heavily on local authorities and on industry, it is essential that any measure dealing with the Poor-law should be framed, generally, on the lines of the Report of the Committee of 1917 on the Transfer of Functions of Poor-law Authorities in England and Wales; and this House accordingly urges that the Bill which it is intended to prepare and circulate to the local authorities this autumn should at least provide for a complete absorption of the existing Poor-law authorities and their functions in the county, borough, and district councils." He said that there were at least 100,000 sick persons in workhouses and union infirmaries. There were also the municipal hospitals of which there were something like 1100 maintained out of the rates as compared with 700 20 years ago, and these provided 11,000 beds. Under the Public Act Health which authorised these hospitals there was no restriction as to infectious disease; as a matter of fact they did treat a good many other cases and their cost was now something like £4,000,000 a year. There was overlapping between these two different classes of institution. A test was organised by the National Council for Social Service in 1922 in Reading and Halifax, and they found that out of 2016 cases in which boards of guardians were giving outdoor relief there were 101 in which help was also given by the maternity and child welfare service of the local authority. There were 35 cases in which the Poor-law authorities did not know that help was being simultaneously given in the form of school meals and 89 in which the Poor-law authority did not know that the unemployment benefit was being received at the same time. Boards of guardians had in 1911 very nearly 5000 medical officers costing in salaries and drugs just over £1,000,000. When the Insurance Act was passed introducing a scheme of medical attendance and drugs, which provided for practically the whole of the wage-earning population, the 5000 doctors did not diminish at all. Their number had since gone down by something like 150, but their salaries had gone up to £1,800,000. The expenditure of the local authorities which was now £1,000,000 a day would go on increasing, but any relief to the local taxpayer was out of the question, so long as they had the present overlapping and continuance of separate authorities each dealing with the same set of people and each clamouring for Government grants.

Dr. HADEN GUEST said he believed that on the medical side they would get quite unexpectedly good results from the abolition of the Poor-law. He wanted the medical profession to be free to use their enormous knowledge for the purpose of building up a very much healthier, better balanced, and better coördinated humanity than now existed. He spoke as a workman with an ideal, a very simple and straightforward ideal, held, he believed, by the majority of the members of his profession throughout the land. That ideal was to make science the servant of humanity and to make it go down to the depths of the life of our nation, and improve the existing conditions. At the present time it was not lack of knowledge which stood in the way of the physical improvement of children, men and women living in our cities. It certainly was not lack of sympathy or lack of money. What we did lack was simply order and the coördination of existing institutions. Our present civilisation was by no means stable. The chief danger with which we were menaced was not foreign competition, nor a future war, but that the morass of poverty in which our civilisation was foundered would rise and sap the vitality of our institutions. There was a very grave danger that the worst types of human beings grown and formed by the worst type of environment in the poorest possible parts of this country, of Europe, and of the rest of the world would gradually become the dominating factor. The human mind had a habit of turning away from things that were painful. It was too horrible to think of the suffering that went on, the mental and moral degradation, all to a large extent unnecessary. He did not believe that the existing authorities who administered the Poor-law, and the other social services, were actuated by any but the best motives; but they could not do the job. By a proper organisation of medical services they could probably diminish the amount of disease in the country by 25 per cent. By proper organisation of child life, by the medical care of it, they could go a long way to abolish the ordinary infectious diseases, such as measles and whooping-cough, which were not regarded as seriously as they should be.

Mr. NEVILLE CHAMBERLAIN (Minister of Health) said that if he accepted the motion on behalf of the Government that did not mean that he was in any way committed to the particular recommendations. Since the report of the Committee of seven years ago a good many things had happened. He thought that they should begin by transferring administrative functions without perhaps altering the present law. It was the intention of the Government to deal with this question at the first possible opportunity. As soon as he had the main ideas formulated in his mind he proposed to discuss them with local authorities, boards of guardians, and others concerned; to circulate a draft Bill, and to invite criticism and comments upon it, and finally to place before the House of Commons something that would embody the considered views of the Government and bring this long-needed, long-desired reform to a happy and successful conclusion.

The motion was agreed to.

Deaths from Small-pox in England and Wales.

Mr. TREVELYAN THOMSON asked the Minister of Health the average number of deaths due to small-pox in England and Wales, and the average number of deaths due to vaccination in each of the last ten decennial periods.—Sir KINGSLEY WOOD replied: The following are the required figures for the last seven decennial periods. Comparable figures are not available for the decennia prior to 1851–60.

Average Annual Deaths from Small-pox and Vaccination in England and Wales.

Year.	Small-pox.	Cow-pox and other effects of vaccination.
1851–60	4177	7
1861–70	3421	10
1871–80	5705	29
1881–90	1228	52
1891–1900	406	43
1901–10	129	19
1911–20	11	9

Refuse Dump at Little Britain.

Lieut.-Commander BURNEY asked the Minister of Health whether he was aware that London refuse was being dumped at Little Britain, in the county of Middlesex; was prejudicing the health of the inhabitants of Yiewsley; and, seeing that the local authorities of Yiewsley had no power under their by-laws to prevent this dumping, whether he was prepared to introduce a Bill during the present session taking power to safeguard the health of the public in this and similar cases.—Sir KINGSLEY WOOD replied: My right hon. friend is aware of the case mentioned by my hon. friend. The local council have adopted by-laws to prevent nuisances from dumping, and it is proposed to discuss the application of these by-laws with them. My right hon. friend cannot at present undertake to introduce legislation on the subject.

THURSDAY, MAY 28TH.

Forcible Feeding in Asylums and Prisons.

Colonel DAY asked the Home Secretary whether patients in lunatic asylums were still forcibly fed; how many were so fed in the year 1924; what was the maximum number of times any one patient was so fed; how many prisoners in His Majesty's prisons were forcibly fed in the year 1924; and would he give their names and the maximum number of times any one prisoner was so fed in 1924.—Sir W. JOYNSON-HICKS replied: As regards the earlier parts of the question which relate to patients in asylums, I must refer the hon. and gallant Member to the Minister of Health. The number of prisoners in prisons in England and Wales who were forcibly fed in 1924 was eight. There are objections to stating the names. The greatest number of times any one prisoner was forcibly fed was 570. This prisoner is a burglar who will not take food and has to be fed forcibly three times a day. His case is entirely exceptional.

Mentally Weak Prisoners.

Mr. RENNIE SMITH asked the Home Secretary what arrangements were made to deal with prisoners who are found to be of weak mentality but were not certifiable as insane or mentally defective; whether they were assembled together and, if so, at which prison; how many prisoners were so assembled and how many of them were under the age of 21; whether they were long-term or short-term prisoners; and in what respect the treatment they received differed from the treatment of the ordinary prisoners.—Sir W. JOYNSON-HICKS replied: Male prisoners who, although not certifiable as insane or mentally defective, are unfit for the ordinary discipline of a prison, are collected in four prisons; female prisoners in three prisons. Since July 1st, 1921, 91 males, seven of whom were under 21 years of age, have been transferred to the centres from other prisons. Four females were transferred, one of whom was under 21 years of age. All were serving sentences of three months' imprisonment or more. In addition, there were at the centres 50 males and 18 females of the same class. Of these, two males and one female were under 21 years of age. These also were serving sentences of three months or more. All such prisoners in these prisons are located together under special supervision. They are instructed in such work of an industrial character as they can perform, and Brabazon classes have been arranged for those who are unfit for ordinary prison work. Outdoor labour, gardening, &c., are carried on as far as possible. The prisoners are under the observation of the medical officers and of a selected staff, and special allowance is made by the officials for the inability of the prisoners to conform to prison discipline. The prisoners receive extra facilities for exercise.

New Housing Construction.

Mr. TREVELYAN THOMSON asked the Minister of Health the total number of houses sanctioned this year and also during the last month by his department for erection with State subsidy under the 1923 and 1924 Housing Acts respectively.—Mr. Neville Chamberlain replied: The total numbers of houses authorised from Jan. 1st to May 20th, 1925, are 35,822 under the Housing Act, 1923, and 11,912 under the Act of 1924. The latter figure includes 9000 houses which had previously been authorised under the Act of 1923. During the four weeks ended on May 20th the numbers authorised were 1706 under the Act of 1923 and 8377 under the Act of 1924, of which 3106 had previously been approved under the 1923 Act.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Comdr. R. Hughes is placed on the Retd. List with the rank of Surg. Capt.

ROYAL ARMY MEDICAL CORPS.

Maj. F. W. W. Dawson to be Lt.-Col., vice Lt.-Col. R. N. Hunt, to half pay.

Maj. W. L. Hay to be temp. Capt. and relinquishes the rank of Maj.

MILITIA.

Capt. H. C. Sinderson to be Maj. and remains secd.

Capt. G. F. P. Gibbons to be Maj.

TERRITORIAL ARMY.

Capt. H. Forrest to be Maj. (Prov.).

Capt. A. J. Chillingworth (late R.A.M.C.), to be Capt.

Capt. J. Robinson resigns his commn. and retains his rank.

Lieut. P. M. Speed (late Argyll and Sutherland Highlanders) to be Lt.

Colonel E. C. Montgomery-Smith, C.M.G., D.S.O., T.D., has been appointed Honorary Surgeon to His Majesty, in succession to Colonel F. Kelly, C.B.E., T.D. (retired).

Medical News.

University of London.—At a recent meeting of the Senate, Prof. E. A. Gardner, the Vice-Chancellor, being in the chair, Dr. E. C. Dodds was appointed to the University Chair of Biochemistry tenable at Middlesex Hospital Medical School. He studied at Middlesex Hospital Medical School. In 1918 he was appointed demonstrator in physiology and in 1919 senior demonstrator in physiology and pharmacology. In 1920 he was appointed assistant in the Bland-Sutton Institute of Pathology, and since 1921 he has been lecturer in biochemistry in the Institute. He obtained the diplomas of M.R.C.S., L.R.C.P. in 1921 and the degrees of M.B., B.S., with distinction in pathology and midwifery, and the B.Sc. degree by research in physiology in 1922 as an internal student, and the external Ph.D. degree in 1925. He has been a recognised teacher since January, 1923. He has published numerous papers in various scientific journals.—The title of Emeritus Professor of Bacteriology in the University was conferred on Prof. Richard T. Hewlett as from August 1st, 1925, on his retirement from the University Chair of Bacteriology in consequence of the closing of the Department of Bacteriology and Public Health at King's College.—The D.Sc. in Physiology was conferred on Mr. B. Babkin and the D.Sc. in Veterinary Pathology on Mr. A. L. Sheather.—Dr. R. A. Young was appointed representative on the occasion of the eleventh annual conference of the National Association for the Prevention of Tuberculosis to be held in London in July, and Sir Holburt J. Waring representative on the occasion of the Second Imperial Social Hygiene Congress to be held at the British Empire Exhibition at Wembley in October.—The semi-general election of medical members of the Senate for 1925–29 resulted in the appointment of the following: By Convocation—Medicine: Dr. E. Graham Little, M.P.; by Royal College of Physicians of London: Sir Wilmot Herringham; by Royal College of Surgeons of England: Mr. J. Sherren; by Faculty of Medicine: Sir Holburt J. Waring.—A course of three lectures on Blood and Circulation from the Standpoint of Physical Chemistry, will be given by Prof. L. J. Henderson (professor of biological chemistry in Harvard University) at University College, London (Gower-street, W.C.) on June 10th, 11th, and 12th, at 5.30 P.M. At the first lecture the chair will be taken by Prof. A. V. Hill.—A course of four lectures on Cardiology will be given by Dr. John Hay (professor of medicine in the University of Liverpool) at University College Hospital Medical School (University-street, Gower-street, W.C.) on June 11th, 12th, 18th, and 19th, at 5 P.M. At the first lecture the chair will be taken by Prof. T. R. Elliott, F.R.S. Admission to the lectures is free, without ticket.

Royal Society of Medicine.—The next social evening commemorating the Charcot centenary will be held on Monday, June 15th, when Fellows and guests will be received by Sir StClair Thomson, the President, at 8.30 P.M. At 9.30 P.M. Dr. Farquhar Buzzard, President of the Section of Neurology, will give an address on Charcot and the Centenary Celebration of his Birth, and many of the works of Charcot and his pupils will be exhibited.

West London Medico-Chirurgical Society.—The annual conversazione of this society will be held in the Kensington Town Hall on June 12th, when Sir Humphry Rolleston, Regius Professor of Medicine at Cambridge, will deliver the Cavendish Lecture. The reception by the President of the society is at 8.30 P.M., and the lecture at 9.

Queen Charlotte's Maternity Hospital.—A series of post-graduate lectures will be held on Thursdays during June and July at the hospital, Marylebone-road, N.W. 1., at 5 P.M., as follows: June 11th, Mr. Aleck W. Bourne: Maternal Mortality; 18th, Mr. Trevor B. Davies: Antepartum Hæmorrhage; 25th, Mr. Louis C. Rivett: Mechanical Difficulties in Labour; July 2nd, Mr. Leonard G. Phillips: Intracranial Hæmorrhage; 9th, Mr. Lane Roberts: Clinical Features of Obstructive Labour; 16th, Mr. Leslie Williams: Toxæmia of Pregnancy.

British Association for the Advancement of Science.—The ninety-fifth annual meeting of this Association will be held at Southampton from Wednesday, August 26th, to Wednesday, Sept. 2nd. The President is Prof. Horace Lamb, F.R.S. Among the principal subjects of medical interest to be dealt with in presidential addresses and sectional discussions are the following: The Physiological Basis of Athletic Records; the Acquisition of Muscular Skill; Mental Law of Diminishing Returns; Health in Schools; the Inorganic Elements in Animal Nutrition; Distribution of Animals and Plants in Relation to Continental Movements. The sections will be in session severally or jointly throughout the meeting for the hearing of papers on many other subjects within their various departments.—The Leeds City Council have unanimously invited the Association to hold its meeting in 1927 at Leeds. The Association met in Leeds in 1861 and in 1890. Particulars may be obtained on application to the Secretary, British Association, Burlington House, London, W. 1.

National Association for the Prevention of Tuberculosis.—The eleventh annual Conference will be held on Monday and Tuesday, July 6th and 7th, in the Robert Barnes Hall of the Royal Society of Medicine, 1, Wimpole-street, London, W. 1. On Monday at 10.30 A.M. the Conference will be opened by Sir Kingsley Wood, M.P., Parliamentary Secretary to the Ministry of Health. Three of the four sessions will be devoted to discussion of tuberculosis in childhood in which the following will take part: Prof. Pirquet (Vienna), Dr. Stanley Griffith (Cambridge), Dr. Richard Wagner (Vienna), Sir Robert Philip (Edinburgh), Dr. Clive Riviere (London), Prof. A. Louise McIlroy (London), Dr. Fergus Hewat (Edinburgh), Sir Henry Gauvain (Alton), Prof. John Fraser (Edinburgh), and Dr. Gordon Pugh (Metropolitan Asylums Board). The afternoon session on Tuesday will concern itself with the Treatment of Tuberculosis by Sanocrysin, on which Prof. Holger Møllgaard (Denmark), Prof. Knud Faber (Denmark), and Prof. Lyle Cummins (Cardiff) will speak. At the annual meeting of the Association on Monday evening films will be shown, including one recently acquired by the Association, entitled the Invisible Enemy.

Fellowship of Medicine and Post-Graduate Medical Association.—On June 9th at 5.30 P.M. Sir Thomas Horder will give the opening lecture of the June to July series at 1, Wimpole-street, on Some Cases of Fever without Physical Signs.—Three special courses are continuing throughout the months—namely, in Dermatology at the St. John's Hospital; Venereal Diseases at the London Lock Hospital; and Tropical Diseases at the London School of Hygiene and Tropical Medicine.—From June 8th to 27th a special course in Gynæcology will be held at the Chelsea Hospital for Women.—The Victoria Park Hospital will hold a fortnight's course dealing with the various Diseases of the Heart and Lungs from June 8th to 20th.—From June 22nd to July 4th an intensive course has been arranged by the London Temperance Hospital.—In July there will be special courses in the following subjects: Cardiology at the National Heart Hospital; Diseases of Children at the Queen's Hospital; Neurology at the West End Hospital for Nervous Diseases; and Urology at St. Peter's Hospital for Stone. The programme of the Fellowship of Medicine, together with copies of the syllabus for each of the courses, may be obtained from the Secretary at 1, Wimpole-street, London, W. 1.

Rontgen Society.—The annual general meeting of this society will be held on Tuesday, June 9th, at 8.15 P.M. in the British Institute of Radiology, 32, Welbeck-street, London, W. 1. A paper on Investigation of the Heart Movement by the Use of the Slit Diaphragm will be read by Dr. Robert Knox.

The Committee of the Royal National Orthopædic Hospital, 234, Great Portland-street, London, W., has prepared plans for providing an additional 200 beds at the country branch at a cost of not less than £50,000. The present out-patient department is now "hopelessly inadequate," the total attendances last year having greatly exceeded 71,000, and plans have been laid for the extension of this department, the nurses' home, resident medical officers' quarters, and workshops at the cost of another £50,000.

Research Defence Society.—The annual general meeting will be held at the house of the Medical Society of London, 11, Chandos-street, W. 1, on Tuesday, June 9th, at 3.30 P.M. The chair will be taken by Lord Lamington, and a short lantern lecture given by Dr. R. A. Lyster on Our Defences Against Small-pox.

Infant Mortality in Dublin.—Speaking last week at the annual meeting in aid of St. Ultan's Hospital for Infants, Dr. M. Russell, medical officer of health for Dublin, remarked that a great deal had been said about Dublin's dirty milk and the havoc it played with child life. The truth was that milk—dirty or clean—entered very little into the question at all, because most of the time the infants never got milk of any kind. Infant mortality was high in Dublin because housing conditions were such as compelled families of eight or ten persons to live in one room. According to the medical report of the hospital the percentage of illegitimate babies admitted increased from 15 per cent. in 1923-24 to 19 per cent. in the present year, and the death-rate among illegitimates increased from 18 to 54 per cent. This very high death-rate among illegitimate babies had this year raised the total death-rate in the hospital to 44 per cent., as compared with 30 per cent. in 1923-24.

Donations and Bequests.—The Harrogate Town Council have made a gift of £5000 for the purchase of a site in Knaresboro'-road for a new infirmary.—Mr. John Smith, Dewsbury, bequeathed £1000 to the Dewsbury and District Infirmary.—The late Mr. William Lyall Stewart, of Edinburgh, left the residue of his property (about £30,000), subject to certain life interests, for distribution for charitable purposes in Scotland.—Mr. Alfred Dickinson, of Cedar Lodge, Sunderland, left by will £2000 for distribution among the Sunderland Royal Infirmary, the Monkwearmouth and Southwick Hospital, the Durham County and Sunderland Eye Infirmary, the Sunderland Orphan Asylum, and the Sunderland Children's Hospital.—By the will of the late Sir George Donaldson, of Grand-avenue, Hove, Sussex, the London Hospital and the Sussex County Hospital will receive £1000 each.—Among other bequests the late Mrs. Annie Eliza Clegg McCay, of Troy Hall, Londonderry, left by will £1500 to the Londonderry Eye and Ear Hospital and £1000 to the Montrose Infirmary, Scotland. The residue of the property will be divided between the Montrose Infirmary, St. Dunstan's Hostel for the Blind, and the Londonderry City and County Infirmary.—Mr. William Sillito, of Eccleshall, near Stafford, who was once a patient in the Staffordshire General Infirmary, bequeathed to this institution a legacy of over £5000.—The London Hospital has received a cheque for £60 from a man who 12 years ago was operated on in the hospital for an internal complaint. In gratitude for his recovery each year he has given a percentage of his income to help the hospital funds. The total amount contributed by him is over £500.—The Belgrave Hospital for Children has received an offer of £10,000 to assist in defraying the cost of building a new west wing on a condition that the committee of the hospital shall themselves collect another £10,000.—Mrs. Adelina Ellerton Creagh-Osborne, of Ditton Park, Slough, left £1000 to King Edward VII. Hospital, Windsor.—Blackburn Royal Infirmary has received a cheque for £500 from Mrs. Nutall, an ex-mayoress, as a thanksgiving for her restoration to health, and in recognition of the sympathy and kindness shown during her illness. Mr. W. Kay, cotton merchant, and his wife, Mrs. Kay, sent a sum of £500 in commemoration of their golden wedding, and their late son. A third gift of £100 was from an anonymous donor.—Sir Gilbert Wheaton Fox, Bart., sugar merchant, Sefton Park, Liverpool, left £1000 each to the Liverpool Royal Infirmary, the Royal Southern Hospital, Liverpool; the David Lewis Northern Hospital; the Stanley Hospital, Bootle; the Liverpool Seamen's Orphanage and the Liverpool Prison Gate Mission; £500 to the Birkenhead Borough Hospital, and £2000 each to the Liverpool Bluecoat School and the training ship *Indefatigable.*

Medical Diary.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Friday, June 12th.

OPHTHALMOLOGY: at 8.30 P.M. (Cases at 8 P.M.)

Papers:

Mr. G. H. Pooley: The Operative Treatment of Acute and Chronic Dacryocystitis.

Dr. G. Montagu Harston: The Safety Limits of the Jullundur Operation for the Intracapsular Extraction of Cataract.

To be followed by the

Annual General Meeting:

Election of Officers and Council.

BIOCHEMICAL SOCIETY.

Monday, June 8th.—5 P.M. (at St. Thomas's Hospital, S.E.). *Communications:*—J. Patterson: The Carbohydrate Content of Normal Urine. H. P. Marks: Some Observations on the Testing of Insulin. R. H. A. Plimmer and J. L. Rosedale: Study of Van Slyke's Method of Analysis of Proteins. R. H. A. Plimmer and J. L. Rosedale: Experiments on Nutrition. R. H. A. Plimmer: The Action of Nitrous Acid upon Amides and some Amino Compounds. W. J. N. Burch: Some Esters of Phosphoric Acid.

MANCHESTER MEDICAL SOCIETY.

Wednesday, June 10th.—4.30 P.M. (at the Manchester Royal Infirmary), Clinical Meeting.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF PHYSICIANS.

Tuesday, June 9th.—5 P.M., Dr. S. A. K. Wilson: Disorders of Motility and of Muscle Tone with special reference to the Corpus Striatum. (First Croonian Lecture.)

Thursday.—5 P.M., Dr. Wilson: (Second Croonian Lecture.)

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street W.

Monday, June 8th, to Saturday, June 13th.—West Lecture Hall, Royal Society of Medicine, Wimpole-street, W. Lecture arranged by the Fellowship of Medicine and open to all members of the Medical Profession. At 5.30 P.M., Tuesday, June 9th, Sir Thomas Horder on Some Cases of Fever without Physical Signs.—Chelsea Hospital for Women, Arthur-street, S.W. Post-Graduate Course in Gynæcology, lectures and demonstrations daily. Operations, pathological demonstrations. First week.—London School of Hygiene and Tropical Medicine, Endsleigh Gardens. Tuesday and Thursday, at 2 P.M., lecture-demonstration by Dr. P. Manson-Bahr and Dr. G. C. Low.—St. John's Hospital for Diseases of the Skin, Leicester-square, daily demonstrations in the O.P. Department. Bi-weekly lectures by Dr. Sibley and Dr. Whitfield.—City of London Hospital for Diseases of the Heart and Lungs, Victoria Park, E. Post-Graduate Course in Chest Diseases. Lectures, clinical demonstrations, and laboratory demonstration.—London Lock Hospital, Dean-street, W. Comprehensive Course. Daily out-patient instruction, and lectures dealing with the diagnosis and treatment of venereal diseases. Second week.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.

Monday, June 8th.—11 A.M., Surgical Registrar: Surgical Wards. 12 noon, Mr. Simmonds: Applied Anatomy. 2 P.M., Dr. Scott Pinchin: Medical Out-patients.

Tuesday.—11 A.M., Mr. Endean: Venereal Diseases. 12 noon, Dr. Burrell: Chest Cases. 3 P.M., Dr. Pritchard: Medical Wards.

Wednesday.—11 A.M., Medical Registrar: Medical Wards. 2 P.M., Dr. Burnford: Medical Wards. 2.30 P.M., Mr. Donald Armour: Surgical Wards.

Thursday.—10 A.M., Dr. Grainger Stewart: Neurological Dept. 11 A.M., Sir Henry Simson: Gynæcological Wards. 2 P.M., Mr. Bishop Harman: Eye Dept.

Friday.—10 A.M., Dr. Dowling: Skin Dept. 2 P.M., Mr. Sinclair: Surgical out-patients. 2 P.M., Mr. Vlasto: Throat, Nose, and Ear Dept.

Saturday.—10 A.M., Dr. Saunders: Medical Diseases of Children. 10 A.M., Mr. Banks-Davis: Operations on Throat, Nose, and Ear.

Daily, 10 A.M. to 6 P.M., Saturdays, 10 A.M. to 1 P.M., In-patients, Out-patients, Operations, Special Departments.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

Tuesday, June 9th.—4.30 P.M., Dr. J. K. C. Laing: Demonstration of Cases of Mental Disease (at the Mental Hospital, New Southgate, N.).

Friday.—4.30 P.M., Mr. A. E. Giles: Treatment by Radiation in Gynæcology.

Daily.—Clinics in General and Special Departments, Demonstrations, Operations, &c.

QUEEN CHARLOTTE'S MATERNITY HOSPITAL, Marylebone-road, N.W. POST-GRADUATE LECTURES.

Thursday, June 11th.—5 P.M., Mr. Aleck W. Bourne: Maternal Mortality.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen-square, Bloomsbury, W.C. 1.

POST-GRADUATE COURSE: MAY–JUNE, 1925.

CLINICAL LECTURES AND DEMONSTRATIONS.

MONDAY, June 8th.—2 P.M., Out-patient Clinic: Dr. Hinds Howell. 3.30 P.M., Ocular Palsies: Mr. Williamson Noble.

TUESDAY, June 9th.—2 P.M., Out-patient Clinic: Mr. Walshe. 3.30 P.M., Fractures of the Skull: Dr. Donald Armour.

THURSDAY, June 11th.—2 P.M., Out-patient Clinic: Dr. Kinnier Wilson. 3.30 P.M., The Effects of Increased Intracranial Pressure: Dr. Riddoch.

FRIDAY, June 12th.—2 P.M., Out-patient Clinic: Dr. Gordon Holmes. 3.30 P.M., Progressive Muscular Atrophy: Dr. James Collier.

COURSE OF LECTURES AND DEMONSTRATIONS ON THE PATHOLOGY OF THE NERVOUS SYSTEM.

MONDAY, June 8th.—12 noon, The Neuron: Dr. J. G. Greenfield.

A Course of Clinical Demonstrations will be given by Dr. H. J. Macbride, chiefly on METHODS OF EXAMINATION OF THE NERVOUS SYSTEM, in the Wards at 10 A.M. on Tuesdays and Fridays. The fee for this Course is £2 2s.

Mr. Armour and Mr. Sargent operate at the Hospital on Tuesday and Friday mornings at 9 A.M., or at such other times as may be announced.

Any part of the Course may be taken separately. Special arrangements will be made for those unable to take the whole Course.

Fees should be paid to the Secretary of the Hospital at the Office on entering for the Course.

J. G. GREENFIELD, Dean of Medical School.

ST. MARY'S HOSPITAL INSTITUTE OF PATHOLOGY AND RESEARCH.

THURSDAY, June 11th.—5 P.M., Prof. J. Joly: Radiology.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.

THURSDAY, June 11th.—4 P.M., Mr. T. Higgins: Appendicitis in Childhood.

THE LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, Leicester-square, W.C.

TUESDAY, June 9th.—5 P.M., Dr. Sibley: Alopecia.

THURSDAY.—5 P.M., Dr. Whitfield: *Eczema.*

Appointments.

DOTTRIDGE, C. A., M.D. Camb., D.P.H., has been appointed Certifying Surgeon under the Factory and Workshop Acts for the Lyndhurst District of the County of Southampton.

FELDMAN, W., M.D. Lond., M.R.C.P. Lond., Medical Superintendent St. Pancras Hospital.

HEWER, C. LANGTON, M.B., B.S. Lond., Anæsthetist to the Hospital for Tropical Diseases, Endsleigh-gardens, N.W.

LAPAGE, C. P., M.D. Manch., F.R.C.P. Lond., Consulting Physician, Royal Albert Institution for the Feeble-Minded, Lancaster.

LEONARD, T. M. R., Lieut.-Colonel, D.S.O., Assistant Director of Medical Service in Nigeria.

MCCARTNEY, J. ELVINS, M.D., Ch.B. Edin., Director of Pathological Services to the Metropolitan Asylums Board.

STALLMAN, J. F. H., M.B., B.S. Lond., F.R.C.S. Eng., Honorary Assistant Surgeon, Gloucestershire Royal Infirmary and Eye Institution.

St. Thomas's Hospital: ARCHER, E. C., M.R.C.S., L.R.C.P. Lond., SIMS, T. H., M.B., B.Ch. Camb., REA, R. H. T., M.B., B.Ch. Camb., ALEXANDER, R. D., M.B., B.Ch. Camb., MARKS, D. P., M.R.C.S., L.R.C.P. Lond., BOGGON, R. H., M.R.C.S., L.R.C.P. Lond., ROBINSON, A. B., M.R.C.S., L.R.C.P. Lond., and BAITSON, A. A., M.B., B.S. Lond., Casualty Officers and Resident Anæsthetists; COOKE, A. M., M.B., B.Ch. Oxf., TURNEY, H. F., M.B., B.Ch. Oxf., WALKER, E. G. L., M.R.C.S., L.R.C.P. Lond., and MCLEAN, W. W., M.R.C.S., L.R.C.P. Lond., Resident House Physicians; HOPE-SIMPSON, J. W., M.B., B.Ch. Camb., Resident House Physician for Children; THWAITES, W. G., M.R.C.S., L.R.C.P. Lond., GERVIS, W. H., M.B., B.Ch. Camb., HUDSON, M. W. P., M.R.C.S., L.R.C.P. Lond., and STARKEY, R. S., M.R.C.S., L.R.C.P. Lond., Resident House Surgeons; JEFFERY, A. L. P., M.B., B.S. Lond., Resident Orthopædic House Surgeon; ALLAN, F. G., M.R.C.S., L.R.C.P. Lond., and BARRON, R. McG., M.R.C.S., L.R.C.P. Lond., Resident House Surgeons; REES, E. J., M.R.C.S., L.R.C.P. Lond., Senior Obstetric House Physician; WEBB-PEPLOE, M. H., M.B., B.Ch. Camb., Junior Obstetric House Physician; HEATH, W. E., M.R.C.S., L.R.C.P. Lond., Senior Ophthalmic House Surgeon; GORDON, G. D., M.R.C.S., L.R.C.P. Lond., Junior Ophthalmic House Surgeon; NEILSON, D. F. A., F.R.C.S. Eng., CAVENAGH, J. B., M.B., B.Ch. Oxf., COOPER, G. K., M.B., B.Ch. Camb., COOK, L. C., M.R.C.S., L.R.C.P. Lond., DOBIE, J. M., M.R.C.S., L.R.C.P. Lond., KIRK, J. P., M.R.C.S., L.R.C.P. Lond., BARROS, H. T., M.D. Lond., MARCANO, G. R., M.R.C.S., L.R.C.P. Lond., TRIM, E. A., M.R.C.S., L.R.C.P. Lond., [illegible], H. L., F.R.C.S. Edin., ROBINSON, J. J. R., M.R.C.S., L.R.C.P. Lond., [illegible], C. A., M.R.C.S., L.R.C.P. Lond., GIBBENS, J. H., M.R.C.S., L.R.C.P. Lond., LLOYD-WILLIAMS, P., M.R.C.S., L.R.C.P. Lond., L.D.S., LANCASTER, A. L., M.R.C.S., L.R.C.P. Lond., NICHOLSON, H. W., M.R.C.S., L.R.C.P. Lond., THOMPSON, E., M.R.C.S., L.R.C.P. Lond., ACKERMAN, D., M.R.C.S., L.R.C.P. Lond., DE JERSEY, G. W. S., M.R.C.S., L.R.C.P. Lond., MAUDSLEY, J. P., M.R.C.S., L.R.C.P. Lond., BROCKMAN, E. P., M.B., M.Ch. Camb., F.R.C.S. Eng., REES, D. L., M.R.C.S., L.R.C.P. Lond., WIENER, R. A. K., M.R.C.S., L.R.C.P. Lond., TOMPSON, B. E., M.B., B.Ch. Oxf., SHIRES, B., M.B., Ch.B. Edin., CHIESMAN, W. E., M.R.C.S., L.R.C.P. Lond., RICKMAN, J., M.B., B.Ch. Camb., HODDER, R. G., M.R.C.S., L.R.C.P. Lond., HAWARD, F. C., M.R.C.S., L.R.C.P. Lond., CRAWFORD, D. P., M.R.C.S., L.R.C.P. Lond., RILEY, D., M.R.C.S., L.R.C.P. Lond., and GUYMER, R. F., M.R.C.S., L.R.C.P. Lond., Chief Assistants and Clinical Assistants.

Vacancies.

For further information refer to the advertisement columns.

Aberdeen County.—Asst. M.O.H. £600.

Ashton-under-Lyne District Infirmary.—H.S. at rate of £150.

Barrow-in-Furness, North Lonsdale Hospital.—H.S. £175.

Birmingham, Queen's Hospital.—House Governor and Sec.

Bradford Children's Hospital.—H.S. £100.

Bristol General Hospital.—Hon. Clin. Assts.

Bristol, Southmead Hospital.—Second Asst. M.O. £200.

Cambridge, Addenbrooke's Hospital.—H.S. at rate of £130.

Cancer Hospital, Fulham-road, S.W.—H.S. at rate of £100.

Chiswick General Hospital.—Hon. S.

City of London Maternity Hospital, City-road, E.C.—Res. M.O. at rate of £100.

Dreadnought Hospital, Greenwich.—H.P. and H.S. Each at rate of £110.

Dundee Royal Infirmary.—Hon. Asst. Obstetrician and Gynæcologist.

Edinburgh, Royal Hospital, Morningside.—Asst. P. £350.

General Lying-in Hospital, York-road, Lambeth, S.E.—Res. M.O. at rate of £100.

Hampstead General and North-West London Hospital, Haverstock-hill, N.W.—H.P., H.S., Cas. M.O., and Cas. Surg. O. All at rate of £100.

Hastings, Royal East Sussex Hospital.—Hon. Ophth. Surg.

Hospital for Sick Children, Great Ormond-street, W.C.—H.S. Also H.P. Each at rate of £50.

Lanchester Rural District Council, &c.—M.O.H. £800.

London Hospital.—Head of Children's Dept.

London Lock Hospital, 91, Dean-street, W.—Clin. Asstships.

Manchester, St. Mary's Hospitals.—Two H.S.'s. Each at rate of £50.

Manchester University and Royal Infirmary.—Director of Lab. of Clin. Investigations. £600.

Middlesex Hospital and Medical School, W.—Medical Registrarship. £300.

Northampton General Hospital.—Hon. S.

Oldham Royal Infirmary.—Three H.S.'s. Each at rate of £200.

Queen's Hospital for Children, Hackney-road, Bethnal Green, E.—Asst. S.

Queen Mary's Hospital for the East End, Stratford, E.—H.P.'s and H.S.'s, &c.

Reading, Royal Berkshire Hospital.—One H.P. and two H.S.'s. Each at rate of £150.

St. Bartholomew's Hospital Medical College.—Lecturer on Pharmacology and Therapeutics.

St. Peter's Hospital for Stone, &c., Henrietta-street, Covent Garden, W.C.—Clin. Assts.

Salford Royal Hospital.—H.S. to Gynæcological, &c., Depts., and H.P. Each at rate of £125.

Sheffield, Jessop Hospital for Women.—Asst. H.S. at rate of £100.

Sheffield Royal Hospital.—Res. Surg. O. £200.

West Bromwich, Union Infirmary, Hallam-street.—Visiting S.'s. £150. Visiting P., £200. Aural S., £75. Dental S., £50. Operative Obstetrician, £10 10s. per case.

West London Hospital, Hammersmith-road, W.—H.P., H.S., Aural H.S., and Res. Cas. O. Each at rate of £100.

Wolverhampton and Midland Counties Eye Infirmary.—H.S. £200.

Wrexham Infirmary.—H.S. at rate of £150.

Births, Marriages, and Deaths.

BIRTHS.

AYLEN.—On May 29th, at Halesworth, Suffolk, the wife of John Aylen, M.R.C.S., L.R.C.P., of a son.

COOMBS.—On May 26th, at Bedford, the wife of Martin Coombs, M.B., of a son.

FURNESS.—On May 25th, at Latham House, Melton Mowbray, the wife of Harold S. Furness, M.D., of a daughter.

JOBSON.—On May 26th, at Crofton-road, Ealing, the wife of J. Stanley Jobson, M.B., F.R.C.S., of Knightsbridge, S.W., of a son.

MARRIAGES.

SCOTT—GODFREY.—On May 28th, at Bexley Parish Church, Kent, Joseph Wilkie Scott, *M.C.*, M.D., M.R.C.P. Lond., of Regent-street, Nottingham, to Marjory Annie Godfrey, M.R.C.S., L.R.C.P., third daughter of W. S. Godfrey, Esq., of Red House, Bexley Heath, Kent.

DEATHS.

MCCARTHY.—On May 24th, at Cliftonville, Margate, Justin McCallum McCarthy, M.D., M.R.C.S. (late of The Grove, St. George's, Shropshire), in his 73rd year.

SCOTT.—On May 29th, at a London nursing home, Dr. James Scott, of 11, Templeton-place, Earl's Court.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Comments, and Abstracts.

THE SUN, THE WIND, AND THE SKIN IN THE TREATMENT OF DEEP-SEATED TUBERCULOSIS.*

BY G. R. GIRDLESTONE, F.R.C.S. ENG.

THE SUN.

THE sun offers light and heat. Their actions differ profoundly. Can we learn how and when to use each?

(a) *Light.*—Ultra-violet light is intensely irritating, but it is stopped by the epidermis. In small doses it stimulates, in large doses destroys, cells near the surface. The sun's rays, as their wave-length increases from violet towards red, gradually lose photochemical activity but gain penetration and heating power. Those that travel beyond the skin have little or no bactericidal action.

(b) *Heat.*—The skin is heated throughout its depth, the arterioles in the corium dilate, its circulation and metabolism become active. But if the heat of the summer sun is unchecked by cool and moving air, the skin and the whole body quickly get too hot. General loss of tone results, and any further roasting leads to danger.

Dangers—Light: Overdose of superficial action, sunburn; of deep action, sun fever. Heat: Overdose to the head, sunstroke; applied widely, heat stroke.

Thus we learn that free use of the sun's light without protection, or of its heat without cooling, is harmful. Fortunately a good skin provides protective pigment, and days without wind are rare.

In *superficial tuberculous lesions*, violet and ultra-violet light attack the bacilli directly.

In *rickets*, the deep action of light is sought, only small doses are needed, and the effect is excellent in unpigmented and non-pigmenting children and animals. In this condition photochemical action counteracts for the time being a deficiency in light or in diet.

Is it not possible that in deep-seated tuberculosis, as in rickets, light and cod-liver oil are only of value in cases where there has been a deficiency in light or in diet?

Where the body's normal need for light is satisfied, has its further exposure to the photochemical action of light any value in the treatment of deep-seated tuberculosis? I am inclined to doubt it for the following reasons: (1) Unless or until the skin is pigmented the optimum dose of light is small, and limited by the dangers of overdose of its superficial or its deep action. (2) Exposure to sunlight can only be advantageously increased pari passu with pigmentation. This experience suggests that the "deep" dose of light cannot be advantageously increased. (3) The sun offers light and heat, a good skin stops the light as near the surface as possible. The better the skin, and the more tropical the race, the deeper the pigmentation, and the more complete the barrier to light. (4) The best results in the treatment of deep-seated tuberculosis are obtained in well pigmented patients. They can be much longer exposed to sun and wind than those poorly pigmented, but little or no greater dose of light passes the barrier. Apparently the main value lies among the other factors of sun and wind.

If it is true that photochemical activity plays a comparatively unimportant part in the treatment of deep-seated tuberculosis by exposure of the body to the sun and the wind it is entirely wrong and very misleading to estimate the value, and calculate the dosage, of any sample of sunlight by its content of violet and ultra-violet light. The treatment of rickets and of superficial tuberculous lesions by light is a different matter; if ultra-violet light is definitely wanted, and particularly prescribed, it is an advantage to be able to dispense it accurately.

THE WIND.

The wind cools the skin by convection and stimulates it by its impact. The combination is pleasant, and, like a contrast bath, promotes active hyperæmia of the skin. The cooling induces an increased production of heat in the body. The wind also affects metabolism, rousing by its ever varying touch the sense organs of the skin, which, in their turn, are in sympathy with the deep viscera.

THE SKIN.

The skin has fallen into neglect. It is not merely an excretory organ or something which we can blister or paint with iodine. Clearly the skin is our first line of defence against invasion of the body; its efficiency in resisting bacteria is so complete that it is often forgotten. But quite apart from the cuticle, which it has developed as a physical defence, there is evidence that the skin plays an important part in our reaction to the tubercle bacillus. Both its sensibility and metabolism appear to share in this action. Most of us feel strongly that good pigmentation carries with it a better prospect of recovery, though it is a popular and dangerous fallacy to suppose that pigmentation is a sign of healing and its depth a measure of cure. Pigmentation is the response of a good skin to photochemical light; a skin capable of cutting out the violet end of the spectrum, capable also of gaining the greatest benefit from other effects of sun and wind.

THE AIR BATH.

On cloudy days it is just an air bath, on windy days a wind bath, when the sun shines it is a sun bath. The best results are obtained with the long exposures which a warm sun, a cool wind, and a well-pigmented skin allow. The maximum exposure is desirable, but its length is limited by the danger of too much light or heat or cold. In England, from October to March there is little or no danger of an overdose of light, but in the spring and summer very great care is necessary. Rollier's table, prepared to suit the Leysin sunlight, is needlessly and disappointingly slow for our mild and fickle sun. Everyone must work out a method to suit the strength of his sunlight, which varies with the latitude and the clarity of the air. Allowance must be made for different types of skin: for poor skins the dose must be reduced, while good skins will benefit by longer exposures. I entirely agree with Rollier that several short exposures are better than one long one; especially when too much heat or cold is feared. In the winter I give three or four air baths a day. In very cold weather they are each just a few seconds' exposure of the body to a douche of keen wind, never long enough to cause lasting chill. A cold bath of wind or water gives the greatest benefit when it is followed by an after-glow of the skin. I am looking for the best method of making sure of this after-glow.

I have great faith in the value of air baths all through the year. An artificial light department is not essential, perhaps not very helpful, to an orthopædic hospital.[1] For cases of rickets do splendidly with air baths and suitable diets. And I think it probable that the ordinary (mixed) English weather, applied to the skin in well-regulated doses, will be found as effective in the treatment of tuberculosis of bones and joints as other climates, and far more helpful than any indoor artificial sun.

Oxford.

THE GUARDIANSHIP SOCIETY.

THE valuable work of the Guardianship Society, which has its headquarters at Brighton, was again emphasised at the annual meeting at Brighton on May 21st. The Society has for its object the care of mental defectives and the physically infirm requiring guardianship by means of home life in contra-distinction to institution life. There is no restriction in regard to age, sex, religion, or even nature of infirmity. For 12 years it has carried on its work which has increased and developed year by year. The cases now on the books number 419. Of this total, 165 patients are boarded out under the Board of Control, and 178 are boarded out under the inspection of the Society. The others are all under observation. Many patients are visited in their own homes, and for these an occupation centre has been started, and the Society has just boarded out its first case from a mental hospital. In addition, an after-care committee is being formed for those patients discharged from mental hospitals. A few years ago the Society purchased a cottage farm in Sussex capable of the reception of seven patients. This has practically exceeded all expectations in regard to its helpfulness to the patients, and the Society is hoping to establish another similar home elsewhere when the opportunity presents itself. A new centre has been opened in Essex; and following the urging of the Board of Control that local authorities should make an effort to organise schemes of guardianship on similar lines, several local authorities are getting into touch with the Society.

At the conclusion of the business meeting an address on Public Opinion and the Mental Underling was given by Dr. H. Crichton-Miller, of the Tavistock Clinic. He dealt with his subject under the headings of prevention, education, and environment, which he described as three aspects of the great problem. With regard to the environmental aspect, Dr. Crichton-Miller stated that hitherto the mental underling had been allowed to take his chance; he had been exposed to society and society had been exposed to him; yet slowly but surely public opinion was facing the fact that this was an extremely costly proceeding, and that punishment could not improve those who could not understand. Society, therefore, he considered, was waking up to the necessity of providing special environments for those who could not be expected to adjust to a normal environment. The official solution was State-controlled institutions; some of these in America accommodated 3000. But in his view the ideal solution was that which the Guardianship Society provided—a personally-selected environment among normal people for the ineducable underling. Thus the patient was allowed to feel that he was still a part of and in touch with normal society.

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* Opening a discussion at the meeting of the British Orthopædic Association at Oxford, on April 17th.

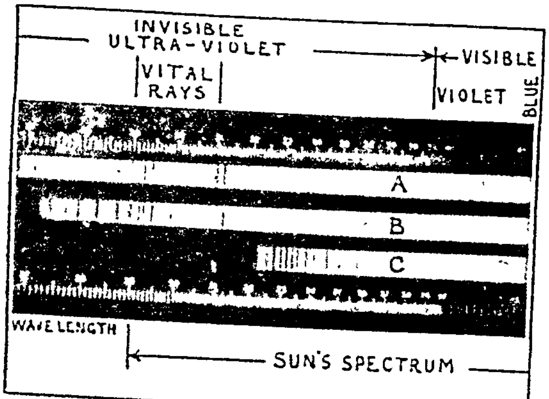
[1] Lupus presents a different problem, requiring an expensive light equipment and a specially trained staff to work it. The treatment of lupus, with its demand for experience and minute accuracy, would be far better done if the cases were concentrated. Half a dozen hospital centres for lupus (possibly attached to orthopædic hospitals as at Alton) would serve England and Wales.

AID TO MEDICAL TERMINOLOGY.

IN writing a book on "Gynecology for Nurses," Dr. M. J. Seifert, of Chicago, added an appendix dealing with the roots of medical words, in order to facilitate the reading of his book. This appendix has now been republished separately, entitled "Synthesis of Medical Terminology" (London: D. Appleton and Co., pp. 30, 3s. 6d.), in the hope that it may also prove useful to students of medicine and dentistry. All the more commonly used suffixes, roots, and prefixes that are met with in medicine are given in alphabetical order, with their meaning, and examples of the way in which words are built up from them. The author enjoins the avoidance of hybrids, although, since he does not himself distinguish between Greek and Latin roots, he affords the reader no protection from coining them, He regrets the few well-established terms in medicine to which arbitrary definitions have been given, and hopes that these may be eliminated by a slow process of evolution. The cultivation of the habit of analysing scientific terms, as he truly remarks, will simplify the study of any subject, and tend towards the development of a cultured and logical mind. Brief and incomplete as it is, the book will prove useful to those for whom it is intended.

LAMPLOUGH'S VITAGLASS.

THIS new window glass is the result of the scientific work of Mr. F. E. Lamplough, M.A., formerly Fellow of Trinity College, Cambridge, and for some years director of research with Messrs. Chance Brothers, who manufacture the glass for him to his formula. The glass contains a high proportion of quartz, is somewhat harder than ordinary glass, and as the accompanying illustration shows transmits freely the waves of short length beyond the visible violet end of the spectrum. Three forms of the glass are supplied. The standard form with "cathedral" surface gives slight diffusion and indistinctness of vision suitable for glazing in schools, offices, sun-lounges in hotels and houses, children's nurseries, invalids' rooms, verandah roofs and windscreens, sanatoria, hospitals, houses for animals and birds, particularly for chickens and laying poultry. A form is available at slightly higher cost with special diffusing surface for privacy. Where clear vision is specially desired, as in the lower sashes in houses, the glass is available at higher price as clear window glass. The ordinary form of the glass can be obtained at 1s. a square foot for small quantities from Mr. F. E. Lamplough, 17, Hunbury-road, King's Norton, Birmingham. A discount of 30 to 15 per cent. is allowed for hospitals and institutions, according to the quantity required and economy of cutting the necessary panes. The clear window glass costs 5s. 6d. per foot, subject to reduction for quantities.



Spectrum photograph, showing the composition of light from an electric arc between iron poles, taken by the Hilger quartz spectrograph. A, without screen. B, passed through Vitaglass 2 mm. thick. C, passed through ordinary glass 2 mm. thick.

THE PUBLIC SCHOOLS YEAR BOOK.

THE Year Book for 1925, edited by C. H. Deane, *M.C.*, B.A., A. P. W. Deane, B.A., and W. A. Bulkeley Evans, O.B.E., M.A. (London: H. F. W. Deane and Sons, the Year Book Press Ltd., 31, Museum-street. Pp. 894. 10*s.* 6*d.*), is the official book of reference of the Headmasters' Conference and is in its thirty-sixth year of publication. For all who have charge of boys at school age it will be found a valuable compendium of information with regard to public and preparatory schools and universities, giving the names of governing bodies and staffs, the means of admission, particulars of fees and scholarships, and so forth. In addition, there are articles on the professions, the public services, and business careers which may follow school or college life, a new section having been added this year dealing with surveying, land agency, and auctioneering. The medical and dental professions are dealt with fairly but briefly, and veterinary medicine finds a place. Interesting supplements are a public schools bibliography divided into general and comprehensive works and works dealing with particular schools, a list of public schools periodicals and old boys clubs, and a list of school colours. It is a valuable work of reference.

WIRELESS FOR HOSPITAL PATIENTS.

THERE is a general belief in America, so we are informed on the good authority of the *Journal of the A.M.A.*, that the brain of the sick man or the convalescent woman functions only during periods of health. In hospital his or her mental pabulum is the inane detective story, the period sex-thriller, the novel rewritten from a movie plot, the collection of short stories, culled from cheap magazines, supplemented by the tattered and coverless issues of current magazines "prepared for the Babbittry." The position may not be as bad as that in this country, but it is safe to say that ennui is not unknown in surgical wards. The *Daily News* is appealing to its readers for funds to fix a wireless point or plug at the bedside of each hospital patient in London, and has set up a small committee to administer the fund subscribed, the members of which are Lord Knutsford, Sir Arthur Stanley, Lieut.-Commander J. M. Kenworthy, M.P., Prof. W. H. Eccles, F.R.S., President of the Radio Society of Great Britain, and Mr. J. Hugh Jones, Managing Editor of the *Daily News*. Capt. P. P. Eckersley, of the British Broadcasting Company, has agreed to advise in matters of equipment. The cost is estimated at about £1 a point, and the total outlay for 25,000 to 30,000 beds at £50,000 or more. The *Daily News* has set the lead by offering itself to equip the Royal London Ophthalmic Hospital in every detail, and the offer has been accepted by the secretary of the hospital, who writes that "to patients who are deprived of their sight (the majority, happily only temporarily) it is scarcely necessary to stress the inestimable boon and the enjoyment which will be given during the time they are undergoing treatment."

The same movement is going on in France, where Dr. Dujardin published in a recent issue of the *Echo Médical du Nord* a poem entitled "Musicothérapie," of which the two concluding stanzas run as follows:—

Grâce au sans-fil, bientôt, de ses flots d'harmonie
Orphée apaisera les affres, l'agonie
Des malheureux couchés aux lits de l'hôpital
Par l'écho d'un concert d'un brillant récital! . . .

Mais épargne à leurs nerfs, confrère,—à leur cervelle,
La musique de fous de l'Ecole nouvelle;
D'un orchestre en fureur l'horrible tintamarre
Pourrait les envoyer, avant l'heure. . . à Clamart!!

We are indebted to Prof. D. T. Barry for the following metrical translation:—

And soon, thanks to wireless, Orpheus will appease
With harmonies sweet poor souls ill at ease,
Their anguish relieving in hospital ward,
As echoes of concerts swift pain can retard.
Consider their nerves, dear colleague, and rule
Out the music of fools of the modern school;
The furious jazz of some horrible band
May send them too soon to the distant land.

HARROGATE.

THE new handbook for 1925–26 sets out the amenities of the Yorkshire spa. An outline sketch is given of the cure itself and of the sports, pastimes, and amusements, educational and other facilities offered at the resort, along with a guide to excursions on foot or otherwise, and a list of hotels and boarding-houses. The brochure on the waters and treatments of Harrogate, giving full details of the cure, may be obtained on application to the General Manager, Baths and Wells Department, Harrogate.

M. H. G.—Intra-mammary insufflation in cows consists of the introduction of air into the udder by means of a suitable syringe, the nozzle of which is inserted into the teats. These may be then closed with clips to prevent the air escaping.

Oliver-Sharpey Lectures

ON THE

INTERPRETATION OF THE ELECTROMYOGRAM.

Delivered before the Royal College of Physicians of London on May 5th, 1925,

BY E. D. ADRIAN, M.D., F.R.C.P., F.R.S.,
FELLOW AND LECTURER OF TRINITY COLLEGE, CAMBRIDGE.

LECTURE I.

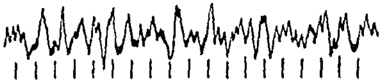
THE subject of these lectures is not one in which striking advances have been made in the last few years. It is one which raises many more questions than it solves, and it may turn out in the end to have little or no importance in practical medicine. But I believe that it is worth while to review our rather scanty knowledge, because the recording of the electromyogram is, at any rate, an additional method of investigating diseases of the muscles and nervous system, because such investigations may turn out to be of great theoretical value to neuro-pathology, and last, but not least, because they are quite easy to carry out. Prof. Einthoven's string galvanometer is now so popular an instrument of clinical research that the whole apparatus has become standardised, simple to work, and, if not cheap, at any rate not so expensive as it would have been if its use were confined to physiological laboratories. It has been used by physiologists quite as much for recording the action currents of muscles and nerves as for the slower changes in the heart. In medicine, however, its use has been confined, in this country at least, almost entirely to cardiac problems, and so far as I am aware the only extensive observations on the electromyogram which have been published here are those of Dr. Golla. In America Stanley Cobb has made several investigations of great importance, and in Germany the subject, set going by Piper in 1911, has already attracted a number of investigators and been the source of lively controversy.

TECHNIQUE.

To record the electric response in a contracting skeletal muscle only one change is needed in the ordinary electro-cardiograph outfit, and that is an increase in the speed of the recording surface. To give a clear picture of every oscillation in the record, a speed of at least 5 cm. a second is necessary, but higher speeds are well within the range of the ordinary moving plate or film cameras. Many varieties of electrode have been used, of which more anon, but a simple and quite effective form is a small zinc plate covered with lint moistened in saline and held in contact with the skin by bandages. Two such electrodes are placed over the muscle a few centimetres apart; they are connected to the galvanometer switchboard and the skin current, if any, is compensated in the usual way. The shadow of the string is now at rest as long as the muscle is completely relaxed, but any active movement produces an immediate blurring of the shadow and a photograph will show that this is due to a succession of irregular oscillations at a rate of 50–250 a second. The record of these oscillations is the electromyogram which we have to interpret (Fig. 1).

The fact that the record is that of a rapidly oscillating rather than a steady current makes it possible to simplify the technique considerably. If we wish to obtain a true record of a current in the body flowing in the same direction for a second or more, we must use non-polarisable electrodes (e.g., a zinc plate, a pad of lint soaked in $ZnCl_2$, a pad soaked in NaCl, and then the skin), and even then we may have to make allowances for polarisation in the skin itself. But as long as the currents are rapidly alternating, polarisation at the electrodes will merely distort the record slightly and will have scarcely any effect on the frequency or amplitude of the oscillations. So, if we are not on the look-out for steady changes as well as the rapid waves, it is quite permissible to make our electrodes out of metal plates bandaged directly on to the moistened skin or, better, of steel needles thrust directly into the muscle to be investigated. These needle electrodes, introduced by Rehn[1] in 1921, have the advantage of reducing the resistance in the circuit, and the much greater advantage of leading directly from the contracting muscle or from a particular group of fibres in it. The result is a much better localisation of the electromyogram to one particular region. Action currents produced in the muscle in question will have a much greater, and action currents in other neighbouring muscles a much smaller, effect on the galvanometer. With the ordinary pad electrodes the localisation is so bad that the response might be affected by almost any muscle in the limb.

FIG. 1.



Tracing of electromyogram recorded from flexors of left forearm during voluntary contraction of moderate force. Upper line—shadow of string. Lower line—time marker recording intervals of 1/50 sec.

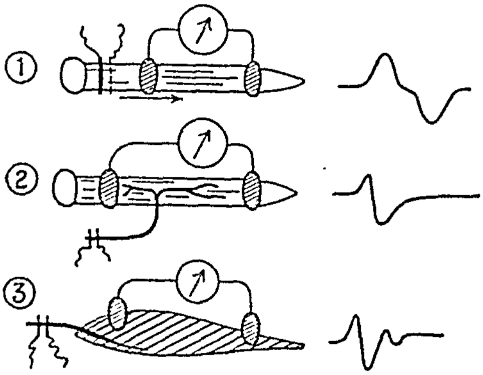
Apart from the use of needle electrodes, the only other improvement, or suggested improvement, in technique since Piper's work is the use of triode amplification to make possible the recording of very small currents. At present, however, the successful working of systems of this kind needs a great deal of care and experience if the results are to be trusted.

NATURE OF THE ELECTRICAL RESPONSE.

The record, then, consists of rapid oscillations of the string, each lasting from 1/50 to 1/250 of a second, and it seemed reasonable enough to suppose that these are due to a series of action currents in the contracting muscle, action currents, that is, of the type made familiar by the classical muscle and nerve physiology. This interpretation is certainly correct, but it is not so obvious as it appears at first sight. No doubt most of us have hazy recollections of the electric changes which accompany activity in a muscle, confused as a rule with the mysterious workings of Pflüger's law. These recollections ought to tell us that the action current of an isolated frog's sartorius is a diphasic affair, and that successive action currents never become fused with one another, so that if the muscle is thrown into a steady contraction by tetanic stimulation it will give a rapid series of diphasic action currents and a not steady effect. So far the electric response of a voluntary contraction agrees with that of an artificial tetanus in an excised muscle. But if we produce an artificial tetanus in a human muscle by stimulating its motor nerve, the excursions of the string are usually much larger than those produced by a voluntary contraction. This fact has caused some misgivings in the past, but there is not much doubt that the larger size of the artificial effect is due to the more complete synchronisation of the impulses in the different groups of muscle-fibres. Indeed, the differences there are, are exactly the differences we should expect to find on passing from the simplest case to one more complicated. The point has been discussed by Piper,[2] Hoffman,[3] and others, but certain aspects are worth re-stating.

The classical frog's sartorius is an ideal muscle for the study of the action current, because it is composed of parallel fibres, of which the majority run almost the entire length of the muscle. If it is stimulated at the pelvic end (where there are no nerve-fibres), a disturbance travels along every fibre from the stimulated point, showing itself by a thickening of the fibre—the mechanical response and a movement of ions—the electric response. The ionic movement is of such a character that if electrodes are placed on the muscle and connected together through a galvanometer, a brief current will pass through the galvanometer towards the electrode which is nearest the active region of the fibre. As the active region passes first under one electrode and then under the other, the current in the galvanometer will travel first one way and then the other, forming the ordinary diphasic response (see Fig. 2 (1)), and the rate of conduction is easily calculated from the interval between the phases and the distance between the electrodes. There are two main complications which arise when other preparations are used: *(a)* We may stimulate the nerve instead of stimulating the muscle-fibre directly (Fig. 2 (2)), and *(b)* we may use a muscle in which the two leading-off electrodes are applied to two distinct groups of muscle-fibres (Fig. 2 (3)). The effect of stimulating by way of the nerve will depend on the position of the nerve-ending in the fibre with reference to the electrodes, for a disturbance will travel out in either direction from the nerve-ending. If this lies between the two electrodes the response will be smaller because of the interference between the two phases—it may be reduced to nothing when the electrodes are equidistant from the nerve-ending, and in any case the separation between the phases will not vary in a regular way with the distance between the electrodes. A further complication is added when the electrodes are on different muscle-fibres. This must almost certainly happen with the penniform type of muscle, and it must often happen with other types, as human muscle-fibres are rarely longer than 5–6 cm. The result will be that the response to a single stimulus may become polyphasic instead of diphasic, since it is unlikely that the active regions of the different fibres will exactly neutralise one another's effect on the galvanometer circuit.

FIG. 2.



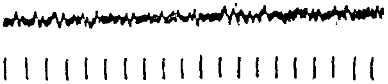
Owing to these complications the response of a human muscle stimulated by its motor nerve may seem to depart considerably from the classical diphasic action current. One muscle may seem to give much smaller action currents than another, though its contractions are no less powerful, and the response may seem to vary in an arbitrary way when the position of the electrodes is altered. The same is true of the action currents due to reflex or voluntary activity; but there is no doubt at all that the oscillations of the electromyogram are caused by the same processes as those which give the action current of the frog's sartorius.

It should be mentioned that Henriques and Lindhard[4] do not agree with the classical account of the action current as due to a change conducted throughout the muscle-fibre. They wish to substitute for it the notion of an oscillating discharge from the motor end-plate. For reasons stated elsewhere,[4] the older conception seems to be much preferable to the new, but the question need not concern us at the moment. There is a general agreement that the action current denotes the passage of an impulse into the muscle-fibre, and the exact process by which the current is produced is immaterial.

TETANIC AND TONIC CONTRACTIONS.

We may take it, then, that the rapid oscillations of the electromyogram are due to a rapid succession of action currents in the muscle, that the voluntary contraction is in part at least a tetanus of the same kind as that produced by repeated stimuli to the motor nerve. This has been shown more directly by actual mechanical records of muscle in voluntary contraction. The very delicate methods used recently by Hill[6] and by Athanasiu[7] (both involving the use of the string galvanometer) agree in showing that the contraction is never steady but exhibits rapid oscillation of about the same frequency as those in the electromyogram. The contraction is an incomplete tetanus in fact, in the sense that the fusion of the successive twitches is not perfect. This leads at once to one of the chief questions which the electromyogram may help to solve. The question is whether there are any contractions of central origin occurring normally or pathologically in skeletal muscles which are not of the nature of a tetanus, which are not accompanied by a rapidly oscillating action current. The answer to this question is still doubtful, though the number of investigations which have appeared on it recently makes one hope that a definite answer is not far off. The position at present is that various examples have been put forward of contractions, centrally innervated, which have appeared to go on without producing an oscillating electromyogram, but further investigation has shown that in most of these examples the oscillations can be detected if the recording system is sensitive enough, though they are often of extremely small amplitude. One such case which will serve as a good example is that of the sexual clasping reflex of the male frog. During the breeding season the forearms are maintained steadily in the clasping position for a fortnight or more, and in 1921 Kahn[8] found that the forearm muscles seemed to be quite free from action currents. Action currents appeared if the reflex was augmented by interfering with the frogs, but disappeared again as soon as the steady condition was returned to. Later researches confirmed this work and added the information that the reflex was not affected by injection of atropine or adrenalin or by section of the sympathetic.[9] Recently, however, the missing action currents have been found by Wachholder[10] and by Lullies.[11] They are extremely small in comparison with the electromyogram of a normal phasic contraction in a frog's muscle, but Lullies has made the interesting observation that the force exerted during the clasp is also very small as long as both frogs are absolutely quiet, but that the slightest stimulus causes an immediate increase both in the force exerted and in the electrical oscillations. There is, in fact, very little of the steady, continuous pressure which the appearance of the forearms suggest, but we are dealing with a reflex which appears to be continuous because it is evoked at once by the slightest movement or external stimulus. The condition suggests a comparison with a mild degree of spastic paraplegia, when the muscles are probably flaccid as long as the leg is completely at rest, but harden into "tonic" activity at once when they are moved or touched by the examiner. In spastic muscles the action current oscillations are also very difficult to detect, and some observers have denied their existence. Hoffmann, Hansen, and Weiszäcker,[12] whose technique is above suspicion, have shown that small oscillations are undoubtedly present and that they increase when the tension exerted by the muscle increases. It would be surprising if this were not so, for in decerebrate rigidity the extensor muscles give the typical oscillating electromyogram (Fig. 3), and the close relation between decerebrate rigidity and spastic paraplegia is too well established to be set aside. The presence of the oscillating response in decerebrate rigidity was described by Dusser de Barenne and Buytendick,[13] and has been confirmed repeatedly. It is an observation of fundamental importance, for it shows that in a contraction which is usually taken as an example par excellence of a tonic postural reflex, there is the same intermittent excitation which is found in the ordinary tetanus. This does not exclude the possibility that there may be some steady excitation of another kind, occurring at the same time and giving rise to no electrical effect but augmenting the contraction of the muscle. This suggestion has often been made on account of the small metabolic exchange, the absence of fatigue in tonic postural reflexes, and the presence of sympathetic as well as ordinary motor nerve-fibres running to the muscle. The relatively feeble electrical effects combined with strong contractions in spastic muscles might seem to favour the idea of a feeble tetanus superimposed on a steady background of some other kind of contraction, but, unfortunately, the electrical effects really give us little information one way or the other, because the amplitude of the electric oscillations may depend on many factors which are not necessarily related to the force of contraction. It is true that in the frog's sartorius Watts[14] has compared the tension developed in a single twitch with the amplitude of the electric response, and finds a linear relation between the two, and this is the relation we should expect if changes in the force of the twitch depended simply on changes in the number of muscle-fibres in action. But if we measure the diphasic instead of the monophasic response (as we must do in human muscles), the maximum e.m.f. will depend on the degree of interference between the two phases—i.e., on the interval separating the moments of arrival of the active region or regions at the two electrodes, and if we are dealing with a series of responses the interference of successive phases will still further complicate matters. All this would be true of a muscle stimulated artificially, so that all the fibres are activated together; a much greater source of uncertainty arises from the fact that in a centrally innervated contraction various groups of fibres may be contracting independently of one another. Clearly the response in the galvanometer could be reduced to nothing at all if there were two groups of muscle-fibres activated alternately so that the action current due to the one group is always in the opposite direction to that in the other group, and generally the less perfect the synchronisation of the different fibres, the smaller will be the average effect at any moment as shown in the string galvanometer. It is in cases of this kind that needles in the muscle have the advantage over pads on the skin, for the latter record the average current in the whole muscle, but with needle electrodes the fibres in the straight line between them will have a greater effect on the galvanometer circuit than the fibres in outlying parts of the muscle. For a further discussion of some of these points we may refer to a recent paper by Forbes and Cattell[15] on the crossed extension reflex.

FIG. 3.



Oscillating action currents from thigh extensors of a cat during decerebrate rigidity.

There is one outstanding case in which a centrally-innervated contraction shows no electric response at all in spite of sensitive recording and rigid technique. This is the case, described by Magnus and Lilliestrand,[16] of the sustained reflex contraction brought about by the injection of tetanus toxin into a muscle. In patients suffering from the disease the contracted muscles have been found by some observers to give the oscillating response and by others to be current-free. In Magnus and Lilliestrand's experiments, however, there seems no doubt of the absence of response in the galvanometer. The contractions were certainly reflex in origin and they were not affected by section of the sympathetic. Whether the absence of response is due to complete lack of synchronisation in the different fibres is a question which must be settled by further investigation.

The conclusion to be drawn is, therefore, that the small size of the electrical effect in certain types of contraction is no proof that these contractions are a mixture of a tetanus and a steady activation which has no electric response. They do not show that a steady effect does not exist, but with the one exception mentioned, the main result is that all kinds of contractions, centrally innervated, are partly at least of a tetanic character.

Lewy has recently brought forward some evidence that in contractions with a marked "tonic" element there is another kind of electric response which shows itself by a steady deflection of the string.[17] If it were proved that a steady current does flow through the muscle when it contracts, it would be valuable evidence for the dual nature of the contraction, but great caution is needed in the interpretation of such effects, as the steady current may be due to changes in the electrodes and galvanometer circuit as well as to changes in the muscle. Einthoven[18] has shown that in decerebrate rigidity there is often a displacement of the mean position of the string and a return to the undeflected position when the contraction is inhibited. But he found that exactly the same displacement is produced by a passive movement of the muscle and concluded that it is due to the alteration in the resistance occurring when the electrodes are moved nearer to one another. Again, Stanley Cobb has published some records of electromyograms[19] which show steady deflections quite indistinguishable from those of Lewy, but Cobb is clear that the movement in his records is due to imperfect fixation of the electrodes on the skin. No doubt these sources of error were taken into account, but their possibility makes one hesitate to accept Lewy's conclusions without further confirmation.

It may be mentioned here that the time-relations of the contraction are much slower in red muscle than in white, so that a red muscle-fibre should be able to give a sustained contraction with a much smaller energy expenditure than a white. But the contractions are of essentially the same type in the two and the electric response of red muscle has the usual form, though it is slower in development and decline.

We must be content, then, to leave undecided the question whether the nervous system produces any sustained contractions which take place without the usual oscillating action current and to return to the consideration of the oscillations themselves.

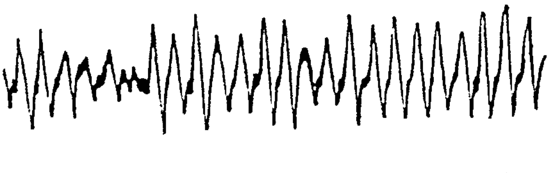
Now, whatever may be the reason for the characteristic frequency and shape of the electromyogram curves, there is no doubt that the oscillations are a sign that the muscle is actively contracting. Thus, without further interpretation, the electromyogram may be used to indicate the onset of activity in different muscles, and in several respects it is a more convenient index than the other signs of activity which may be recorded—the contraction, the mechanical vibrations, or the muscle sound. It has been used in this way for the analysis of movements by Golla and Hettwer,[20] and by Wachholder.[21] The problem which confronts us to-day, however, is to see if we cannot make use of the electromyogram to tell us more about the nature of the activity in the muscle and about the processes in the central nervous system which make it active.

FREQUENCY OF OSCILLATIONS.

For the reasons which have been mentioned, we can get little definite information by measuring the amplitude of the movements of the string—in other words, the strength of the currents in the galvanometer circuit. The frequency of the oscillations should have a much greater significance, and most of the investigations of the electromyogram have centred round this point. It would probably have been a great deal easier to analyse the processes at work if the frequency had shown great variations under different conditions, but we must take nature as we find it, and one of the chief features of the electromyogram is the close family likeness of all electrical records of voluntary contraction. The oscillations are usually irregular and the total number in a second may vary over a fairly wide range, yet the range of variation is much the same for every muscle and for every kind of contraction, so that it would be impossible from an inspection of an actual record to say anything more than that it was a normal electromyogram. A considerable change in the force of contraction does not produce a definite change in the frequency of the oscillations, but merely one of amplitude, and, indeed, the only "normal" condition where the frequency does change is in extreme fatigue, where it is temporarily reduced.

It would not be true to say that the oscillations are completely irregular, though there are often long stretches in a record where the waves seem to occur at random within the limits imposed by a frequency of 50–250 a second and where the most painstaking Fourier analysis seems unlikely to split up the record into trains of regular waves at different frequencies. It is a curious fact, however, that Piper, who was the first to make any detailed investigation of the electromyogram, was satisfied that there was always a dominant frequency in the record of about 50 a second. According to him the typical response consists of a series of large waves occurring regularly at a frequency of about 50 a second with a variable number of smaller waves superadded. His records bear out this statement, but many other workers have been unable to detect any sign of the dominant rhythm. Three years ago my respect for Piper's rhythm was considerably increased by obtaining a record in which the rhythm was remarkably steady (Fig. 4). The record was from the deltoid of a patient with dystrophia myotonica, and for this reason it cannot be described as a normal electromyogram, but since then I have been under the impression that something approaching Piper's rhythm can be found in records of very powerful contractions, though a weaker contraction is less likely to show it. This impression, for which I had very little evidence, has been confirmed by the work of Henriques and Lindhard,[22] which shows very great regularity in the electromyogram of maximal voluntary contractions, but little or none with weaker movements. The frequency of these regular oscillations varies in their experience from about 10 to 65 a second and may vary from one muscle to another in the same individual. A long record will often show small patches of fairly regular waves broken up by irregular waves at a higher frequency (Figs. 5, 6, and 7). It is doubtful if the records are ever completely regular, for measurements of the intervals between the peaks of successive waves will generally show slight variations, but in a "regular" record all the intervals are grouped fairly closely round the average value.

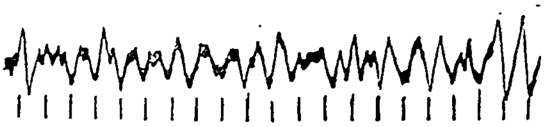
FIG. 4.



Record from deltoid of a case of dystrophia myotonica, showing regular waves.

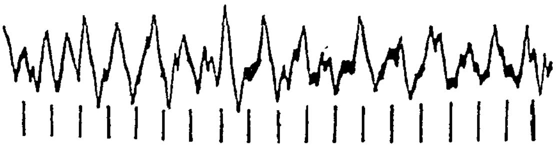
The maximum frequency is not easily determined, for it is certainly high enough to be near the limits of capacity of the ordinary string galvanometer. Using the very perfect instrument at the Marey Institute, Athanasiu[23] has obtained electromyograms with small groups of waves occurring at frequencies as high as 400 to 500 a second. Except in extreme fatigue or in certain experimental or pathological conditions, the frequency is seldom less than 50 a second. Recently, however, Wachholder[24] has detected a series of small waves at very low frequencies (five to ten a second) in all muscles which are not completely relaxed. The waves are diphasic and are recorded with needle electrodes and a tight string. This observation, if generally confirmed, would have an important bearing on the problem of tone and the postural reflexes in general.

FIG. 5.



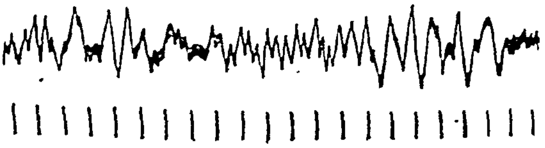
Powerful contraction of supinator longus.

FIG. 6.



Powerful contraction of biceps.

FIG. 7.



Weaker contraction of biceps. Waves more irregular.

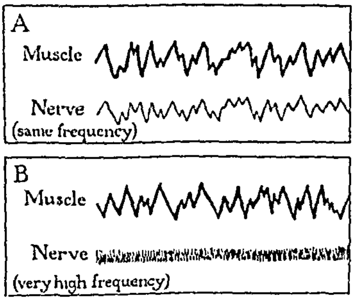
CHANGES IN FREQUENCY.

Apart from the tendency of the oscillations to become more regular when the strength of contraction is maximal, there is no significant change in the normal muscle except in extreme fatigue. Nor has any characteristic frequency been detected in the involuntary movements of various nervous diseases. An exception ought, perhaps, to be made in the case of ankle or patellar clonus, for here each movement is accompanied by a single diphasic action current and not by a series. There are some indications of a reduction in frequency when the sensory nerves from the muscle are interfered with. Weizsäcker[25] has reported a case of this kind with a lesion of the posterior roots and an electromyogram showing waves at only 10 a second, and Dusser de Barenne[26] has reduced the frequency of the oscillations led off from his forearm muscles by injecting novocaine into them in a dose sufficient to anæsthetise the sensory but not the motor nerves. Another way of reducing the frequency is by cooling the muscle. This effect was discovered by Forbes and Rappleye[27] and by Fahrenkamp,[28] and it is sufficiently obvious to be used as a class demonstration. The exact relation between the temperature of the muscle and the frequency of the electromyogram remains to be worked out, but my impression is that a considerable fall of temperature is needed to produce any change in frequency. This completes the list of conditions where the rhythm undergoes a definite change—i.e., a change outside the limits of the ordinary variations of frequency.

THE MEANING OF THE NORMAL FREQUENCY.

What deductions can be drawn from the normal electromyogram, what does it tell us about the nature of the voluntary contraction, the state of the muscle, and the activity of the motor neurones? So far the only conclusion reached has been that the voluntary contraction is tetanic, the muscle, or that part of it which furnishes the electromyogram, being activated intermittently and not continuously. What we have still to discuss is the rate at which this activation takes place, and the question is really of fundamental importance. The point is that a record like the typical electromyogram might be obtained by stimulating the motor nerve to the muscle at a very high frequency (500–1000 a second), which is too rapid for the muscle to follow (Fig. 8). If the voluntary contraction is maintained by a discharge of impulses at such high frequencies from the motor centres, the frequency recorded in the electromyogram represents merely the best that the muscle can do. It will be determined by the state of the muscle, the length of its refractory period in particular, and it will tell us nothing about the activity of the nerve centres except the one fact that they discharge at a frequency too high for the muscle to follow. This possibility may be considered as at one end of the scale. At the other we have the possibility that each wave in the electromyogram is determined by a distinct volley of impulses from the motor centre. According to this interpretation, therefore, the record can give us fairly detailed information about what is happening in the spinal cord. According to the other it can tell us little or nothing.

FIG. 8.



The truth probably lies somewhere between these two extremes, for it is unlikely that the motor neurones discharge such a rapid and steady flow of impulses that the electromyogram bears no impress of what is happening in the cord, and on the other hand, the interpretation must always be complicated by the fact that the fibres of the muscle are not all necessarily acting in unison. On the whole, however, the balance of evidence is in favour of the view that the frequency in nerve-fibre and muscle-fibre is the same, or at any rate, that the two are closely related. This evidence will be discussed in the next lecture.

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TUBERCULOSIS IN THE TROPICS.*

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JUDGING from the annual medical reports of the British colonies, I fear that we must conclude that pulmonary tuberculosis is on the increase amongst the native inhabitants of most of them. Tuberculosis may not loom very largely in the curricula of schools of tropical medicine, but diseases refuse to be localised and assert their right to world-wide prevalence and to this law it is no exception. The features of tuberculosis as it occurs in the tropics are, I think, more concerned with the inhabitants, with their past history in relation to it, and with their housing and mode of life, than with the climatic conditions which are peculiar to tropical countries. The evidence is overwhelming that when tuberculosis is introduced into a country hitherto free from it, the natives manifest a degree of resisting power much inferior to that shown by inhabitants of countries in which it has been present for countless generations. It may be well to consider for a moment the reason for this difference, as much appears to depend upon the explanation which is accepted. Possibly an analogy may help towards a solution of the problem.

In 1910 I was appointed chairman of the Yellow Fever Commission (West Africa). This work led me to take a special interest in that disease and to ponder over the assumed immunity of the natives. I was gradually led to see that no such absolute immunity exists, and that to speak of the natives as the "immunes" and of the Europeans as the "non-immunes," as was then and still is the practice, was to ignore obvious facts. There have been fatal cases amongst the natives in every epidemic in West Africa, not only in the past, but also in recent times. The mortality-rate amongst them as compared with that obtaining amongst the Europeans is no doubt nearly always much lower and the type of the disease is, as a rule, milder, but they are not immune. Why is this? The answer given by Sir Rubert Boyce was as follows:—

> "Those living in a country where the disease is endemic at a very early period in their life get an attack of the disease which naturally confers a certain degree of immunity; later they may get subsequent attacks, but each successive attack is less serious; when manhood is reached the subject is in all probability completely immune."[1]

The investigators sent out to West Africa by the Yellow Fever Commission, all of them carefully selected men, were specially instructed to search

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* A paper read at the International Conference on Health Problems in Tropical America, held at Kingston, Jamaica.

[1] Brit. Med. Jour., Dec. 3rd, 1910.

(Continued from previous column.)

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28. Fahrenkamp Ztsch. f. Biol., 1915, lxv., 83.

for evidence of the occurrence amongst the natives of attacks of fever which conformed to Sir Rubert Boyce's views, but no such evidence was obtained. It must, however, be admitted that it is a very difficult matter in West Africa to obtain trustworthy evidence as to the nature and incidence of the diseases which affect the natives.

I believe that in one form or another the view of Sir Rubert Boyce is still held, but I have great difficulty in accepting it. There is probably no disease an attack of which produces a more profound and lasting immunising effect upon the subject of it than yellow fever, so rare indeed is a second attack that many deny its occurrence. Must we, notwithstanding this fact, believe that every native has four or five such attacks during his life and requires them all to produce such a relative insusceptibility as we admit him to possess? But this is not the only difficulty. If there are at all times sufficient infected stegomyia in West Africa to ensure that all the natives in childhood, youth, and adult life receive doses of the virus adequate to confer upon them their relative degree of insusceptibility to yellow fever, why do Europeans escape for such long periods that the memory of the last epidemic is often lost and replaced by a hope that the disease has at last disappeared from among them? Is this, then, the only way in which a native race can obtain an immunity, either complete or partial to a disease, or failing that, a higher degree of resisting power than the "new-comer" to the country? Yellow fever is pre-eminently a "new-comer's disease"; so also, I submit, is tuberculosis. In the case of yellow fever, the white man usually goes to the disease from a country or an area in which it is unknown; he has little or no acquired resisting power and is fortunate, should he be attacked, if he escapes with his life.

In communities hitherto free from tuberculosis it may first appear, or be more marked, amongst outlying sections of the people in contact with long infected nations, or the native may himself introduce it on his return from such an infected country, whither he had gone either to work or to fight. However it may reach him he is found with little or no resisting power, and if attacked his chances of recovery, or, apart from that, of maintaining a prolonged fight with the disease, are inferior to that of the man who has lived amongst it all his life.

You are all familiar with the figures showing a gradual increase in the percentage of positive results with the subcutaneous tuberculin test and with other tests which indicate that as age advances the percentage increases until in adult life all, or nearly all, give a positive reaction. It has been stated thus: "Children not born of mothers in an advanced stage of tuberculosis come into the world in most cases free from tuberculous infection. As each year advances a progressive number become infected until at the age of puberty a total of one-half is reached. By the time he is adult practically every individual is the bearer of a tuberculous lesion."

If we accept this view, are we to base our methods of dealing with the disease and our treatment of the individual patient upon the conclusions to which it inevitably points? This is not a merely academic question, it is one of vital importance to the clinician, as the following extracts show: "Meanwhile let us lose no time, but take all possible advantage of the scientific facts already established. Let these serve as a basis for concerted action in anti-tuberculous prophylaxis. Since every human being under present social conditions is exposed from an early age to bacillary infection, it is most necessary that children be kept under strict supervision, so that by means, for example, of tuberculin tests repeated every six months any recent contamination can be detected and its source determined."

Here again is the same view stated with equally absolute precision: "The future of tuberculosis prevention lies in the deliberate exploitation by immunisation by means of vaccinating doses of dead or attenuated bacilli." Is this the best way and the only way to obtain an A1 population? I think that before we can accept it we must know clearly the meaning of a positive reaction to these tests and also the significance of a "focal" reaction. Does a positive reaction imply that the disease is present or does it merely indicate that at some time in the life of the individual he has been infected with tubercle? A disease and the virus of a disease are not the same thing.

Colonel Bushnell, in a Study in the Epidemiology of Tuberculosis with special reference to Tuberculosis in the Tropics, writes as follows: "The cutaneous tuberculin test is of value in diagnosis if the result is a positive reaction. It is, however, likely to be negative in the class of cases which most require elucidation." It cannot be claimed that this is very helpful. He quotes Mirauer's[2] results of the examination of 145 non-tuberculous patients, of whom 128, or 88 per cent., gave a positive reaction, and also of 53 tuberculous suspects, of whom 46, or 87 per cent., also gave with 100 per cent. tuberculin a positive reaction. The positive percentages with 25 per cent. tuberculin were 79 and 77 respectively. In discussing Bandelier's[3] results in the examination of 500 sanatorium patients, Colonel Bushnell wisely remarks: "Whether all patients who react in so slight a degree are in need of sanatorium treatment is a question that might be raised by the critical." As one of the critical I venture to exercise that privilege.

Dr. Noel Bardswell, who has had an exceptional experience of this disease, in a paper on the Subcutaneous Tuberculin Test,[4] writes as follows:—

> "Failure to react to tuberculin does not exclude tuberculous disease."
>
> "In my opinion the test is not a means whereby the existence or absence of tuberculous disease can be determined. Neither when a tuberculous lesion is present does the test give any information as to its activity. Lawrason Brown and Heise have arrived at substantially the same conclusions."[5]

A "focal" reaction is, however, quite another matter; here there is a lesion the presence of which, if it is in the lung, can possibly be determined by physical or X ray examination. In a work on "Pulmonary Tuberculosis" (p. 260) I described the effect of tuberculin on a man of high resisting power and with the form of the disease which goes with such a high resisting power—i.e., fibroid tuberculosis—and what was the result? Four calcareous particles were expectorated, one surrounded by pigmented lung tissue; another portion of lung tissue; and one cavity was formed. It is usually wise not to disturb sleeping dogs. On p. 55 of the same work I mentioned the case of a man whose life for 40 years had hung upon the precarious integrity of a fibrous capsule around a caseous mass, and who, when the capsule gave way, was dead in 28 days from acute miliary tuberculosis of the lungs. Now combine these two cases and give the second man sufficient tuberculin to produce a "focal" reaction. What might and what almost certainly would have been the result? He would have been dead in a month. Focal reactions in cases of pulmonary tuberculosis are, in my opinion, not free from risk.

The almost universal prevalence of tuberculosis after a certain age has been reached is held to be further confirmed by post-mortem statistics, those of Naegeli being most often cited. It is obvious that without some measure of agreement as to what is to be accepted as a tuberculous lesion the figures of different observers dealing with different nations are likely to show a wide divergence. If a pleural adhesion is regarded as of equal value to a puckered cicatrix near the apex of the lung, with a pigmented fibro-caseous or calcareous nodule about its centre and compensatory emphysematous changes around it, then of two observers one may absolutely reject the former lesion—i.e., the pleural adhesion—as trustworthy evidence, whereas both would accept the latter. Yet I have heard it contended that a pleural adhesion is evidence of previous tuberculous infection. I have observed that the only subjects above middle age who are or may be entirely free from pleural adhesions are the subjects of general emphysema. In such cases on autopsy the lungs may come out of the thorax as readily as they do in the case of a child. How is this to be explained? For many years I made many post-mortems and evidence of arrest of tuberculosis was always sought for, but I was not "out" to find few or many such obsolete lesions, but to prove that they were tuberculous lesions. It is a dangerous thing to be on the look-out for evidence in support of a theory; if so, one is very likely to find it.

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[2] Beitr. z. Klinik. d. Tub., xviii., 51.

[3] Ibid., ii., 285.

[4] Tubercle, July, 1921, p. 133.

[5] Twenty-four Years' Experience with the Subcutaneous Tuberculin Test, Amer. Jour. Tuberc., June, 1920, iv., No. 4.

Some years ago my friend Sir John Rose Bradford, F.R.S., who during the whole of the war was consulting physician at the Etaples Base, when preparing the Lumleian lectures[6] (1920) on the Clinical Experiences of a Physician during the Campaign in France and Flanders, 1914–1919, asked me in what percentage of post-mortem examinations I should expect to find obsolete tuberculous lesions; my reply was, "In about 9 per cent." He said, "I thought you would say 90 per cent. It is curious that that is the exact figure obtained from an analysis of 2121 post-mortems at Etaples." The figures are as given in Table I.

TABLE I.—*Etaples Area, 1917–18.*

	No. of cases.
1. Post-mortem examinations	2121
2. Tuberculous lesions were found in	256
3. Death in these 256 cases was directly due to tubercle in	62
4. The total incidence of tuberculous lesions in the whole of the post-mortems made was 12 per cent.	
5. Obsolete tuberculous lesions were found in men dying from wounds or some other accidental cause other than tuberculosis in 9 per cent. of the total number examined.	

These figures are to me very interesting. Here we have a striking confirmation from an absolutely independent and trustworthy source of the accuracy of the figures of myself and Dr. Sidney Martin, F.R.S., published in 1891, which have hitherto been considered to be far too low. By assembling the three independent observations we get Table II.

TABLE II.

Date.	Source of material.	No. of post-mortems.	Obsolete tuberculous lesions in lungs.
1879–86	Middlesex Hosp. (Fowler).	1943	177 (9·0 %)
1890–91	Middlesex Hosp. (Martin).	445	42 (9·4 %)
1917–18	British soldiers in France (Etaples) (*Bradford*).	2121	191 (9·0 %)

The incidence of and mortality from tuberculosis among the native and British troops in France in 1918 is shown in Table III.[7]

TABLE III.

—	Annual case *incidence per* 10,000 of annual average strength.	Annual deaths per 10,000 of annual average strength.
South African Native Corps .	186	167
Cape Coloured Labour Corps.	444	88
Indian Native " " .	142	53
Chinese " " " .	36	12
British troops in France and Belgium	10	0·5

It is interesting to note that no obsolete tuberculous lesions were found on autopsy of the native troops; evidence of a lack of resisting power. We are all agreed that racial and family characters of body and mind, endless in number and variety, may be transmitted from one generation to another through countless ages from father or mother to son or daughter. The laws governing such inheritance are being slowly but surely worked out.

I account for the greater resisting power of the natives of certain countries to yellow fever or to tuberculosis by assuming that if all the minute details above referred to can be contained within their chromosomes, so also can a greater or lesser resisting power to disease, acquired by the contact of countless generations with that disease, be there and be transmitted. One individual may have high or low resisting power to disease in general, whereas another may have a high or low resisting power to a special disease, and such special liability may be evidenced by certain characters of the body and of the mind. The reason why it can be said that "Mary Jane brings all the catching diseases into our family" is that Mary Jane has a low resisting power to disease in general, but she may be quite free from any special liability to, say, tuberculosis, notwithstanding the fact that one of her sisters presents all the features characteristic of that liability. It is the modern fashion either to deny the existence of such indications or to minimise their importance. I am not suggesting that the disease itself is transmitted, as I have for years taught that in the case of private patients, that is of those whose former history can be most closely investigated, if it is thought to be worth the trouble, in the majority of such cases it is possible to arrive at a fairly accurate opinion as to how, when, and where infection occurred.

Tuberculosis, and especially pulmonary tuberculosis, is a disease the clinical course of which presents such wide variations and leads to such startling and unexpected terminations, either in death or recovery, that it requires almost a life-time to obtain such a knowledge of it as enables one to speak with even a semblance of authority. Amongst those physicians who have had this experience I have found but little divergence of view as to the existence of individuals of the type just referred to, nor have they any doubt that in England it is a type which is now steadily diminishing in numbers, but as between them and those who have not had this experience there is a wide divergence of view. Some families, Nature's masterpieces—survivals like Old Masters and the Classics from much rubbish—are endowed with such a high degree of resisting power that they persist through many successive centuries without manifesting any inherited tendency to disease. I am acquainted with a member of such a family from whom I learned that his ancestry has now been traced to three generations prior to 1300, and that in the elder branch of the family the succession from father to son has been unbroken through all those years. In this family to-day they think nothing of 80 years, and only begin to feel old at 90; about 96 they may die, apparently out of consideration for the claims of the rising generation.

I see no necessity to assume that Nature restricts herself to one method only in arming her most finished product against the microbial millions also of her fashioning, which to us are diseases, but which to themselves are species that must be maintained. I do not believe in the deliberate exploitation of immunisation by means of vaccinating doses of dead or attenuated tubercle bacilli as a method of creating an A1 population. I would rather strive in every possible way to improve the physique of the nation and thus to increase the resisting power of the people to disease, including tuberculosis. The fall in the death-rate from pulmonary tuberculosis in Great Britain began before modern sanitary measures had had time to operate, and it will be accelerated in that and other countries when governments appreciate to the full that the provision of healthy homes for the people is a matter far transcending in importance any other with which they are called upon to deal.

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[6] THE LANCET, 1920, ii., 539.

[7] The Primitive Tribes and Tuberculosis, S. E. Cummins, Trans. Soc. Trop. Med., June, 1912, v., No. 7, 245.

Administrative Measures.—Notification.

I now pass on to consider administrative measures for dealing with tuberculosis in the tropics. If one is attempting to estimate the result of a method of preventing or treating a given disease it is obviously essential to ensure that the cases dealt with are really examples of that disease. In a booklet entitled "Problems in Tuberculosis," recently published (1922), I have given the evidence on which is based the statement that during the war 75 per cent. of the diagnoses of pulmonary tuberculosis in regard to the British troops were erroneous. Dr. Rist, of Paris, an authority on the subject, has confirmed my statement by citing similar facts in regard to the French troops, and in other countries the same error was made in a like proportion.

Whether notification of tuberculosis should be enforced must depend in the tropics upon the local conditions and upon the degree of civilisation to which the people concerned have attained. It is useless if the notifications, as is too often the case, are only received a short time before the death of the patient or after his decease.

The value of notification, apart from statistical inquiries, depends upon the use that is made of it in dealing with contacts and in removing them from unhealthy surroundings.

After-care committees and local tuberculosis centres are valuable adjuncts in any administrative scheme. The latter name avoids the use of the word "dispensary," which in Great Britain is regarded as a place where drugs are to be obtained.

Specific Remedies.

I have never met with a case of pulmonary tuberculosis in which I have been able to satisfy myself that any good had resulted from the administration of tuberculin, but I have seen many in which any chance of recovery that the patient possessed had been destroyed by its use. The time has been too short for a reasoned judgment on the value of Prof. Dreyer's diaplyte vaccine, but, speaking generally, opinion is not favourable. I have seen a case treated with it in which 1/200,000 of a milligramme induced a reaction followed by eight days of continuous fever, whereas previously the temperature had been for a considerable period hardly above normal. Like other forms of tuberculin, it is probably a measure of the resisting power of the individual. Before any clinical use is made of such a remedy or of anything of a similar nature which may be brought forward in the future, it is necessary that overwhelming evidence should first be produced that it confers immunity on animals. This appeared to me to be the weak point with regard to Prof. Dreyer's diaplyte, and subsequent investigations have shown that it does not produce any such result. The 1923 report of the governing body of the Lister Institute, of which I am a member, contains the following statement:—

> "Dr. Schütze has in the past nine months tested the therapeutic value of Dreyer's diaplyte vaccine on tuberculous guinea-pigs. No evidence whatever has been obtained that the course of the disease in these animals is favourably modified by this treatment."

Sanatoria.

In temperate climes sanatoria at high altitudes present an undoubted advantage. In the tropics the conditions at such altitudes, if they are available, may or may not be suitable to a native population. The sanatorium should be situated on the healthiest site available and should be the nucleus of a settlement, as at Papworth Hall in Cambridgeshire. The other features of such a settlement appear in the following

Scheme for a Tuberculosis Settlement.

Sanatorium Department.—Diagnosis ward; clinical ward; operating theatre; visiting surgeon; X ray installation; clinical laboratory; sanatorium block; graduated exercise and graduated labour.

Hospital Department.—Hospital block.

Industries Department.—Huts; hostels; cottages; workshops: (*a*) training, (*b*) handicrafts; outdoor industries; sale of produce.

(*a*) *Diagnosis Ward.*—All patients on admission should pass through this ward, remaining there until the fact that they are really cases of pulmonary tuberculosis has been settled. On leaving this ward patients would be transferred to the sanatorium block.

(*b*) *Clinical Ward.*—This ward should be occupied by cases requiring close observation and those in the earlier period following the operation of artificial pneumothorax; which will in future play an increasing rôle in the treatment of the disease amongst the industrial classes.

(*c*) *Operating Theatre and X Ray Installation.*—These are essential, if artificial pneumothorax and the use of the thoracoscope form part of the treatment adopted.

(*d*) *Sanatorium Block.*—For patients going through the usual sanatorium course, but in whom arrest of the disease has not yet been obtained.

Hospital.—For advanced cases and such as do not respond to sanatorium treatment or who break down when engaged in the industries.

Huts and Hostels.—When the patient leaves the sanatorium and has been through his course of training it is no longer necessary for him to occupy a bed in an expensively equipped ward, and it costs much less to maintain a considerable number of two-bedded open-air huts. To be transferred from a hut to a hostel is a step in promotion; and a definite flow of promotion is one of the secrets of the successful working of a settlement.

Cottages.—For married men; a further step in promotion.

Workshops.—Training in industries carried on in hygienic workshops involves in temperate climes less exposure to climatic conditions, which may be harmful, than open-air occupations, but in the tropics such considerations may not apply.

A settlement, unlike a colony within a ring fence, forms part of the community as a whole. Main roads may pass through it. Its shops are open to all. Its industries employ such of the tuberculous as are capable of work, and many of them are so; their wages help to maintain themselves or their families; their work, if properly controlled, contributes to their health and promotes their happiness; the products of their labour are sold in the open market, and they are paid the wages customary in their particular industry, having regard to restricted hours of labour and to an output less than that of a healthy man.

The open secrets of the successful management of the industries of a settlement are: (1) All heads of departments must be men who have themselves gone through the tuberculosis mill. (2) There must be a prospect of promotion for all. (3) Repetition work which can be easily learned is the chief feature of the industries, whereas a new handicraft can only be acquired by long application. (4) All the heavy work must be done by machinery. (5) Every department must be run on business lines; a settlement is no place for amateurs. (6) The ideal head of a settlement is a physician with a flare for organisation and business.

The sanatorium is no longer the unit, it has become merged in the settlement.

That such a tuberculosis settlement is not a plague-spot, avoided by its neighbours, is shown by the following extracts from a letter from Dr. P. C. Varrier-Jones, the director of Papworth industries, and from many visits I am able to confirm his statements:—

> "We have experienced no local objection whatever. Indeed, our village is so much more prosperous than those in the surrounding country that our inhabitants are, I hear, looked upon with green-eyed jealousy. Wages are better than in the villages, and the conditions superior, so that instead of opposition we have readiness to coöperate in trade and other ways."

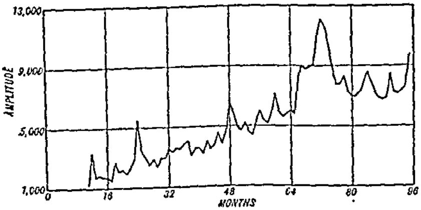
My advice to any colony disposed to grapple seriously with the tuberculosis problem is to destroy its slums and to start a tuberculosis settlement on the lines which I have herein suggested. Any country that rejects compulsory vaccination and retains its slums must pay for small-pox hospitals and tuberculosis settlements. The tuberculosis problem is to a very large extent a housing problem in all parts of the world.

"PERIODICITY" OF CHOLERA IN INDIA.

By A. J. H. RUSSELL, C.B.E., M.D. St. And.,
MAJOR, I.M.S.; DIRECTOR OF PUBLIC HEALTH,
MADRAS PRESIDENCY.

Recent bulletins issued by the Health Section of the League of Nations show that at the present time India is practically the only part of the world in which cholera exists in epidemic form. India has, of course, been long recognised as one of the important centres for this disease, although it is doubtful if Bengal is the only "endemic home" of cholera in India as has so often been stated. But very little information of value has been recorded in connexion with its epidemiological features.

There can be no question that cholera has in India a regular seasonal periodicity. This feature of the disease has been indeed recognised wherever cholera has been experienced. Examination of the statistics for cholera deaths in the Madras Presidency over a long period of years showed that the annual periodicity occurred with the greatest regularity. When graphs were prepared by plotting the monthly number of deaths over this prolonged period this annual periodicity was not only demonstrated, but a longer periodicity wave became fairly obvious. J. Brownlee, the statistician with the Medical Research Council, has demonstrated the 87-week and 97-week periodicity in measles epidemics in a number of towns in England by a method known as the periodiogram analysis. This method has been applied to the cholera deaths for Madras Presidency for a peiod of 25 years, the statistics being arranged in three groups of districts, according to the periods in which these districts were affected by the different monsoons. In each of the three groups the annual periodicities are very apparent; but by far the highest amplitude is reached in each group at the 72-month period, which proves that cholera in Madras Presidency, for the period o years under examination, has gone through a regular six-yearly cycle. As far as the writer has been able to discover, no such periodic trend has previously been demonstrated in connexion with this disease, and the first question which naturally arises is whether the same periodicity holds good for other provinces or other endemic centres in India, or whether the harmonic curve is a mere chance occurrence. From work done during the last two months the writer is now in a position to state that the same six-yearly periodicity has occurred in Bombay Presidency, the Punjab, the United Provinces, the Central Provinces, and in Mysore over the period 1896–1923.



Madras Presidency, Northern Districts Group: Graph showing monthly amplitudes over period 1902–21.

This fact seems to be of sufficient importance to have it recorded at the earliest possible date. Further work on the same lines is being carried out; but even if the conclusions arrived at hold good only for those enormous areas—which include the greater part of the Indian continent—it is a fact of far-reaching importance in connexion with the measures usually utilised for prevention of the disease. No mention has been made of the so-called "endemic homes" of cholera—viz., Bengal and Assam. The statistics for these provinces will be analysed later and the results published in a further communication, along with other work on the same subject. Meantime the mere knowledge of this six-yearly periodicity has enabled the public health department in Madras Presidency to control its preventive work in connexion with the disease, and has prevented waste of effort in unnecessary directions at unnecessary times. The graph shows the monthly amplitudes for one of the three groups of districts in Madras Presidency. The annual periodicities are quite obvious, but the most striking feature is the enormously high amplitude at the 72-month period. It is typical of the graphs obtained for the other two groups of districts in Madras Presidency, and also for those of the other five provinces mentioned above. Full details of the statistical work done and further points in connexion with the epidemiology of cholera will be published separately.

Clinical and Laboratory Notes.

A CASE OF HÆMOPHILIA.

By W. B. Burke, L.R.C.P. & S. Irel.,
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The following case is interesting owing to the unusual position of the hæmorrhage, and the apparently unknown cause.

L. S., male, aged 18, was admitted to the hospital on August 12th, 1924, under my care. He was sent in as a possible case of psoas abscess.

On examination he was seen to have marked flexion at the right knee- and hip-joints with inability to move the limb at these joints; passive movement was very limited and caused great pain. The knee-joint was flexed to an angle of 45°. There was marked prominence of the right hypochondriac and right iliac regions, which on palpation suggested a large intra-abdominal tumour extending from the liver right down to Poupart's ligament. The whole area from the liver above to Poupart's ligament below and extending right over to the mid-line was dull. The skin over this area was normal. On examining the spine nothing abnormal was noticed and further physical examination elicited negative results. The boy was quite fit and doing his work up to three weeks before, when he first complained of stiffness in the right hip and numbness in the leg, as if the leg was "asleep"; he was then treated for neuritis. About three days before his admission he noticed a swelling in the right side which gradually increased.

Previous History.—At the age of 5 he had a tooth extracted and hæmorrhage of a severe character followed and continued at intervals for about two months. When 12 years old he had a further bad hæmorrhage following another extraction, after which he had to remain in hospital for five weeks. Two years later he sustained a blow on the leg which caused a large subcutaneous hæmatoma and necessitated his being in hospital for about two months.

Family History.—Of a family of four boys, one died in infancy of acute osteomyelitis of the femur, two others, still living, bleed extensively from the slightest trauma. One of these was under my care some months ago with a septic wound in the right forearm of a week's duration which had commenced to bleed violently. As none of the usual methods of hæmostasis acted successfully I tied the brachial artery, and in about seven days the pulse at the wrist was quite normal. The mother is healthy, but very anæmic in appearance; the father is healthy; the grandfather (maternal) usually bled on slight trauma and died from hæmorrhage following an accident in which his leg was badly injured. Remainder of family history on the mother's side unobtainable.

Operation.—On August 13th, 1924, the day following admission, the boy was given a general anæsthetic (C. and E.). I opened up immediately over the swelling, and on opening the anterior peritoneum I found a large tumour pushing forward the posterior peritoneum so that it was in contact with the anterior abdominal wall. The tumour had the appearance of a hæmatoma and filled up completely the right half of the abdomen. As I was unable to make a full exploration through the small original incision I temporarily closed the wound. A mid-line incision was then made and the abdominal cavity thoroughly explored. The organs were normal, the tumour being completely retro-peritoneal. Concluding that it was a hæmatoma I decided to evacuate it through my original incision so I reopened it, and having opened the posterior peritoneum cleared out two kidney trayfuls of blood-clots. This left a large cavity which seemed to end in a cul-de-sac about the lower pole of the right kidney which seemed normal, and there was no damage to any of the surrounding structures to cause the hæmorrhage. On removal of these clots the leg became straight, as the pressure was removed from the iliopsoas. The cavity was then plugged with gauze and the abdomen closed. There was no undue hæmorrhage at any time during the operation. Later in the day he was in a poor condition and had to be kept on rectal salines.

On the 15th the cavity was replugged. The patient complained of severe abdominal pain. The following day there was a good deal of hæmorrhage from both wounds and the dressings were soaked through. The wounds were dressed with gauze soaked with adrenalin solution, and hæmoplastin, 2 c.cm., was given. As the hæmorrhage continued I gave him 20 c.cm. of human blood intramuscularly into the buttock, and later in the day a blood transfusion—12 oz. of type 4. He was kept on hæmoplastin and horse serum for a few days and hæmorrhage gradually decreased until August 21st, when it ceased. I removed the stitches on that date and both wounds appeared healed. On August 23rd bleeding recommenced from the lower end of the mid-line incision and caused the wound to open up. Two sutures were inserted and collodion dressings applied, which stopped hæmorrhage except for slight oozing. He was now given 20 c.cm. of horse serum twice daily, but on the 25th a further blood transfusion of 1 pint was given, owing to his poor condition. This made a marked improvement, which was maintained until the 28th, when a large hæmatoma formed in the mid-line incision.

On the 29th, under general anæsthesia, I reopened the mid-line incision and cleared out several large clots which had formed between the peritoneum and the skin and not involving the abdominal cavity at all. I plugged the space with adrenalin gauze and put in a few retention sutures. For a few days after this there was some oozing, but the cavity granulated up from the bottom and healed. At a later date he was given a course of massage and electrical treatment to tone up the muscles of the leg. For a time the extensor action of the limb was somewhat weak, but at the present time this weakness has disappeared and the patient now walks normally and appears to be in good health.

Following the first operation the liver dullness disappeared completely and remained absent for about three weeks, an incident I am unable to account for. On each previous occasion, where trauma or surgical interference took place, I am told by his mother that no hæmorrhage occurred for three days, and it is interesting to note that the same period elapsed in this case.

I have not been able to determine what was the primary cause of the hæmorrhage as the boy denies having met with any injury even of a trivial nature, but it seems quite feasible that he must have sustained some crushing injury in the right lumbar region.

COAGULEN (CIBA) FOR HÆMOPTYSIS.

By ANDREW J. MORLAND, M.B., B.S. LOND.

IN the case here recorded arrest of severe hæmoptysis followed the intrapulmonary injection of coagulen (Ciba).

The patient, a strongly built male aged 33, entered the Palace Sanatorium at Montana on Feb. 11th, 1925. His tuberculous history began with a dry pleurisy on the right side in 1912. He appears to have recovered completely from this, as he served as an officer throughout the war, and was only in hospital for a few weeks after severe gassing in 1915. The patient began to cough towards the end of 1917, and tuberculosis of the right apex was diagnosed in 1918, the diagnosis being confirmed by the presence of T.B. in the sputum. Since 1918 sanatorium treatment has alternated with semi-invalid life at home. During the last year dyspnœa has been increasing, but in other respects the patient's condition has been practically stationary; he has been aware for some time that he had a large cavity at the right apex. The weight was 9 st. 7 lb., the highest known weight being 10 st. in 1919.

On arrival the physical signs indicated the presence of a large cavity at the right apex; another cavity was suspected at the left apex, but X ray examination was typical of a localised pneumothorax just below the apex. The cavity at the right apex was seen to be surrounded by a dense fibrous wall. The patient complained chiefly of shortness of breath. For the first week or so the temperature (rectal) varied between 98·6° F. (morning) and 100° (evening). This gradually fell, and after four weeks of rest in bed did not exceed 98° in the morning or 99° in the evening. At this stage the patient was allowed to recline on a couch for an hour or two each day.

About a week later (on April 23rd) hæmoptysis of a pint took place between 10 and 11 P.M. The usual remedies were tried: absolute rest, injection of morphine, ice-bag, and tinct. of ergot. A hæmoptysis of 15 oz. followed between 1.30 and 5 A.M., and a further one of 23 oz. at 9 A.M. During this attack 5 c.cm. of coagulen (Ciba) were given by subcutaneous injection; the patient almost immediately began to experience unpleasant sensations described by him as a feeling of knobs appearing all over his body. The hæmorrhage gradually stopped about half an hour after the injection. At 1 P.M. the bleeding began again, about 12 oz. being lost in the first five minutes. At this time blood was welling up rapidly, about six mouthfuls being expectorated each minute; the patient had already, in about 15 hours, lost three and a half pints. Five c.cm. of coagulen (Ciba) were then injected directly into the cavity, over which bubbling râles were plainly audible. The spot chosen for the injection was the second intercostal space, about two inches from the margin of the sternum. The needle was inserted to a depth of about half an inch and the piston withdrawn, a mixture of air and blood immediately filling the syringe. The contents of the syringe were then injected; arrest of the hæmorrhage followed with dramatic suddenness, only one more mouthful of dark, partially clotted blood being expectorated. At 3 P.M., however, the bleeding began again; another injection of coagulen (10 c.cm.) was given in the same spot; the hæmorrhage stopped gradually about two minutes later, after a total loss of 10 oz.

During the following night there were two slight hæmorrhages of less than 5 oz., consisting mostly of clotted blood. Coagulen was not given. Recovery has been uneventful. The patient has regained his highest known weight (10 st.) and is able to walk two miles with ease.

Coagulen (Ciba), the substance used for injection, is prepared from the blood of animals. It consists chiefly of lipoids and is rich in thrombokinase. It has been used chiefly in surgery for the arrest of intractable hæmorrhage, as described by S. G. Papadopoulos in THE LANCET of Jan. 24th, but has also been given by subcutaneous and intravenous injection for cases of hæmoptysis. The intravenous method is more rapid and certain in its effects but tends to be associated with more or less severe shock. Intravascular clotting is said not to occur. The advantage of injection directly into the bleeding cavity is that the hæmostatic substance reaches the seat of the trouble in a high concentration while the unpleasant effects and possible dangers of intravenous injection are avoided.

Montana.

LEEDS: TRAINING HOSPITAL ALMONERS.—The Institute of Hospital Almoners has approved a scheme for training at the University of Leeds in coöperation with the Leeds Almoners' Training Committee, and grants towards the fees will be made by the Leeds Education Committee to candidates who are unable to meet the entire cost. The fee of the Institute of Hospital Almoners is 40 guineas and the training lasts for a minimum of two years. Hitherto London has been the only training centre, and it is obvious that the cost of residence there must deter many candidates from the provinces from qualifying for work of real importance to large hospitals.

WALKER ACCIDENT HOSPITAL.—This Newcastle-on-Tyne hospital dates from 1870, when it was established by the late Mr. Charles Mitchell, whose works were then the only ones in Walker. The recent transfer thither of the naval yard of Messrs. Armstrong, Whitworth and Co. has doubled the number of patients and additions and improvements had become imperative. These have now been made at a cost of £5000. Chief among the additions are an operating theatre and an X ray department, which, it is claimed, "cannot be excelled even by Newcastle Infirmary." This interesting little hospital has always been maintained by contributions from employers and weekly subscriptions from the operatives, who have agreed to double their contributions.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF SURGERY.

A meeting of this Section was held on June 3rd, Mr. Herbert J. Paterson, the President, being in the chair.

Gastric and Duodenal Ulcer.

Dr. Charles H. Mayo (Rochester, U.S.A.) delivered an address on this subject. He said that in the development of surgery the first necessity had been to secure relief from suffering. Many years ago it was recognised that contractions of the pylorus caused inflammatory conditions around ulcers, resulting in obstruction, starvation, and slow death. Patients were ill for too long a time for the disease to have been cancer. Billroth, after carefully studying the sufferers, did a resection of the obstructed area at the site of the pylorus, partially closing the end of the stomach, and uniting it to the duodenum. In the early days of these operations the mortality was about 70 per cent. This high mortality was probably largely due to the fact that no special effort was made to protect the suture line, for the "suture angle," where there were three lines of stitches, was a frequent cause of trouble, and the duodenum was always a bad bowel to suture. Leakage resulted in most destructive digestion of the sutures. In his second type of operation, Billroth closed the end of the stomach and did a posterior gastro-enterostomy. Hartmann and Mikulicz made a new opening posteriorly, drew over the end of the duodenum, and sutured it in. The operation was not taken up extensively, however, nor was that of Hahn, who forced the stump through the end of the stomach and found the subsequent contraction was worse than before. Then followed the Ramstedt operation, dividing the pyloric muscle without opening the mucous membrane. This, said Dr. Mayo, was a sound proceeding and was still successfully done in the case of children with congenital contractions of the pylorus.

Suture Operations.

In 1892 Dr. John Finney, of Baltimore, devised and carried out the operation of suture of the pylorus and upper duodenum to the greater curvature of the stomach, then, through a horseshoe incision, forcing down the suture line, and closing the outer suture line over it. Dr. Finney had largely given up this operation during the last three years, substituting resection and division at the pylorus, making a new opening in the anterior wall of the duodenum, and suturing into it the pyloric end of the stomach. Dr. Mayo thought this operation was not likely to be very widely adopted.

Mechanical adjuncts, such as the Murphy button and the Mayo Robson bobbin, had a vogue, and the former was still used for specially suitable cases, but most surgeons decided that they did not need these aids. Senn, of Chicago, introduced and used decalcified ox-bone plates, and they were employed throughout the surgical world, but gradually the improved methods of suture took their place.

Next came the Polya operation, by which large areas of the stomach were excised, the end of the remaining portion being attached to the jejunum. This was of wide usefulness, and was being largely carried out to-day; but at times one encountered a very short mesentery in the attachment of the transverse colon, and then it was necessary to carry out the anterior operation of swinging the jejunum over the loop of the transverse colon and attaching it to the divided end of the stomach. The foregoing operations were devised mainly for the treatment of cases of cancer of the stomach, and it was remarkable how small a portion of stomach left to the patient after the operation would distend and usefully function. Balfour modified the Polya operation by working anteriorly, so avoiding an area where the rich blood-supply might cause the cancer to grow with such rapidity as to kill the patient by obstruction.

Gastro-Enterostomy.

Gastro-enterostomy had been quite a successful operation, and in process of time it became a safe and efficient one in the hands of many. Indeed, it seemed to have been performed by some without means being taken to ascertain whether the patient's complaints really had origin in an ulcer, for the symptoms could well be produced reflexly from, for example, gall-bladder trouble. Patients with any abdominal trouble were apt to locate it in the stomach. In one case a patient who had been operated upon elsewhere came to him and he reoperated and found the anastomosis had been made to the stomach within 9 inches of the lower ileum, in another within 10 inches, in a third within 18 inches. The greater part of the food was passing through the gastro-enterostomy opening. In two of the three cases mentioned he was unable to find any sign of ulcer of the stomach.

Very few people had a jejunum which passed straight down from its point of origin. Nearly always the first loop was the splenic loop on the left of the colon. In operating for gall-stones it was useful to remember there was a 50 per cent. chance that one would encounter the third loop, as the first and second were on the left side of the stomach. The third loop crossed the spine and sometimes caused a secondary obstruction ten days or so after the operation.

Discussion on the defects of gastro-enterostomy had led to the development, on the continent, of the great operation of excision of the stomach. He had seen cases in which only a small ulcer of the duodenum was present, giving rise to symptoms in the spring and fall of the year, and for this two-thirds of the stomach had been cut away to ensure freedom from those symptoms. Surgeons, he felt sure, would not consent to such a procedure in the case of their own stomach in order to rid them of trouble occurring beyond the stomach.

Occasionally a large ulcer would develop carcinoma in one wall as a result of chronic irritation. Small ulcers were seldom found to cause this degeneration. Usually these ulcers formed in the areas of highest acidity. In men one-third of the cancers were in the stomach, very few in the small gut. Balfour investigated the records of 1000 consecutive cases of ulcer of the stomach and duodenum which had been operated upon more than ten years before; and he found that 90 per cent. of them could be regarded as surgical successes. In the remaining 10 per cent. were included such troubles as hæmorrhage, obstruction, and gastro-jejunal ulcer. Four per cent. developed gastro-jejunal ulcer when silk was used for the ligatures, and since that had been abandoned the figure was reduced to 2 per cent.

Nature of the Ulcer.

These ulcers were held to be due to the action of acids and pepsin, and were frequently termed peptic ulcers. It was somewhat difficult to explain the occurrence of an ulcer in an acid-free stomach. In such a case one should not be content with a single test; a second or third should be carried out. The reason for this was that acid came strongly 80 minutes after a meal, continued for 20 minutes, and then disappeared. Histamine injections would bring back acid to a stomach from which it had been absent a considerable time. This procedure was not a treatment, but it showed something was wrong with a hormone. Subjects of achylia suffered from troubles in the nervous system. Some children with this deficiency had gastric convulsions and gastric tetany. Dr. Mayor considered that people who had achylia and ulcers for a long time had something wrong in the nervous system, and they were not likely to be greatly relieved. Inasmuch as these people had no acid or pepsin their ulcers were not likely to perforate. Patients with achylia had headache and other distressing conditions because of the alkalinity present.

Production of Ulcers.

Dr. Mayo said ulcers could be produced by large doses of drugs, also by bacteria. A dog, in experimental work, developed a reaction on receiving a chill and ulcers formed, but did not persist. But if the dog had chronic bacterial infection the ulcers continued. With regard to chemically produced ulcers, in most dogs a duodenal ulcer could be caused by separating the common from the pancreatic duct. If the lower duodenum were divided and united to the ileum, so short-circuiting the jejunum, there would be a large number of duodenal ulcers, and these would persist three weeks. Dr. John I. Hunter, a brilliant young anatomist, who recently died, showed that the sympathetic system used 75 per cent. of the total energy of the body; and he undertook an investigation on the proportion of muscles of the body which had only the power of fixation. On occasion these muscles went into a condition of spasm, and caused intestinal troubles. Sometimes cardiac spasm occurred and lasted years, and was cured by an over-stretching of those muscles. There might be present a particular spasm of the pylorus due to a food idiosyncrasy; this was obstructive and hindered the emptying of the viscus. Under normal conditions the pylorus was closed, opening under the influence of the alkalies below it. When the fluids of the liver and pancreas were deflected into the ileum, an ulcer arose in 70 per cent. of the cases.

The question of possible hæmorrhage entered largely into the selection of the operation to be done in a particular case. Hæmorrhage occurred in 24 per cent. of cases of ulcer of the duodenum, but in only 8 per cent. was the bleeding serious in degree. People with bleeding ulcer were best left to recover of themselves; they might go for any period from one to four years without further bleeding and then suddenly there might happen a severe attack of it. Perforation did not often occur in these cases. A point which would have to be decided in an individual case was whether the patient would suffer in the same way as if he had an active ulcer without hæmorrhage. These cases did well after gastro-enterostomy had been carried out. He did not think the hormone had much to do with the causation of this condition.

Conclusion.

In conclusion, Dr. Mayo said he thought doctors were more liable to acquire the closed mind than were most people. Travel had the effect of lessening the respect felt by a man for his own opinions; and he had been witnessing in this country beautiful operations which were done in a way quite different from that he was accustomed to. There were "many ways of going to the post-office," and the essential aim in surgery was to accomplish the needed result with the least possible danger to the patient.

The President exhibited by means of the epidiascope slides depicting the Mayo Brothers and views of their celebrated clinic and hospital.

On the motion of Sir James Berry (who received an ovation on his recent knighthood), seconded by Mr. Cyril Nitch, a cordial vote of thanks to Dr. Mayo for his address was carried by acclamation.

SECTION OF EPIDEMIOLOGY AND STATE MEDICINE.

At a meeting of this Section held on May 28th, Dr. John C. McVail, the President, in the chair, Dr. John Brownlee read a paper on the

Health of London in the Eighteenth Century.

Dr. Brownlee first of all exhibited tables making it probable that there was a considerable influx into London towards the end of the seventeenth century, but that thereafter, down to the end of the eighteenth century, the population was almost stationary and that the general rate of mortality (making allowance for the ageing of the immigrants at the end of the seventeenth century) also changed very little. In a general way, there was not much difference between eighteenth-century London and the most unhealthy urban area for which a life-table had been constructed in the nineteenth century—viz., Manchester township. Dr. Brownlee called attention to the increased proportional mortality from phthisis which the London Bills exhibited, and concluded that there was probably a real increase of phthisis in the last decades of the eighteenth century. He illustrated on the plague statistics of Bombay the movement in time of the maximum of an epidemic, and pointed out very remarkable changes in the seasonal incidence of mortality from convulsions and infantile diarrhœa in London. Mortality from measles was also illustrated.

In opening the discussion, Dr. Major Greenwood referred to the writings of Woolcombe, Sir Gilbert Blane, Sir James Clark, and Farr on the alleged increase of phthisis at the beginning of the nineteenth century. Blane's remark (made in 1815) that "consumptions have been observed to be more frequent of late among young adults, probably from a greater number of sickly children being saved," was of interest.—Dr. T. P. Beddoes thought the timing of an epidemic of plague was mainly dependent on the date of movement of stocks of grain.—Sir George Buchanan wondered whether the nomenclature of diseases in the Bills was sufficiently satisfactory for comparisons.—The discussion was continued by Dr. A. K. Chalmers, Dr. John Carswell, and the President, who all congratulated Dr. Brownlee on the great value of his contribution to the history of mortality in London.

SECTION OF LARYNGOLOGY.

On June 5th the Section of Laryngology held its summer meeting, and the whole day was taken up with papers, discussions, and the exhibition of cases. The chair was occupied by Dr. A. Logan Turner, President of the Section. Among the visitors welcomed by the President were Dr. Tapia (Madrid), Prof. Burger (Amsterdam), Dr. Charles Mayo (Rochester, U.S.A.), and Dr. Graham Brown (Brisbane).

Dr. Tapia read a paper in French on the Big Pharyngostomes as an Accident in Laryngectomy, how they could be avoided, and a method of closing them.

Sir StClair Thomson said Dr. Tapia's paper was founded on a very large experience, as he had done 151 laryngectomies. Before the war, when less was known about plastic surgery, one sometimes had to wait three months before the stoma closed.

Mr. Wilfred Trotter spoke on the subject of

Plastic Surgery in the Treatment of Malignant Disease in the Pharynx and Larynx.

He said the time had now gone when one could contemplate the removal of a malignant growth in this region and leave the patient to struggle with the necessary mutilation which ensued. The surgeon must consider, before undertaking such an operation, in what condition the patient was finally to be left, perhaps he must consider whether the kind of life it would leave him with would be worth having. The object of such plastic procedures was a double one. First, to restore as far as possible speech and swallowing. No one, he thought, could be content with surgical treatment of malignant disease of the pharynx and larynx which did not offer the patient a reasonable chance of maintaining to some degree his natural powers of speech and swallowing. Secondly, it was very important not to leave the patient immediately after the operation with any extensive raw surface upon which infection could occur, with its dangerous sequelæ of cellulitis in the neck and secondary hæmorrhage. In a favourable case of post-cricoid carcinoma the patient could be speaking and swallowing normally six weeks after the primary operation. Regarding the pharynx and larynx as a whole, there were four regions in which a plastic operation was needed and was practicable. The simplest case was that of carcinoma of the posterior wall of the pharynx, yet one could not remove even a small piece of this posterior wall without leaving a gap which had all the dangers of a raw wound. But a large section of posterior wall of the pharynx could be excised, and a flap of skin placed over the area, and the subsequent fistula could be closed in about three weeks. Plastic reconstitution was also needed after dealing with a growth in the near neighbourhood of the upper opening of the larynx when it was necessary to remove the party wall between the larynx and pharynx. In this case the division between larynx and pharynx must be reconstructed out of flaps of skin. Thirdly, plastic methods were needed when dealing with tumours of the larynx itself. The question had been discussed whether the whole larynx should ever be removed; certainly one could leave alone half or one-third of one cord, or even one arytenoid, without diminishing the chances of the patient. The raw surface should be lined with skin, then quite a good voice was generally preserved. The fourth region he referred to was the post-cricoid. A growth here could not be removed without doing a complete section of the cervical œsophagus. And the gullet must be reconstituted, otherwise there would be stricture, and the patient's convalescence would be a dangerous one. By preparing beforehand and doing immediately after the operation a plastic procedure, the patient was enabled to swallow normally.

Rules of Guidance.

Mr. Trotter said the surgeon must know before operating what kind of tumour he was about to deal with. He did not consider that the classification of these tumours of the œsophagus had received due attention. They could be separated off into exactly marked classes, so that the surgeon by examining the patient could recognise what kind of operation he was about to enter upon. Good plastic work could not be done in the pharynx and larynx unless a reasonable degree of asepsis could be secured. Otherwise there would be a good deal of scarring. There was reason for expecting much better results in edentulous patients than in those having many teeth, however healthy.

Mr. LIONEL COLLEDGE related a case bearing out Mr. Trotter's final contention as to the importance of these patients having all teeth removed. The patient was very reluctant to have more than one or two teeth removed, and the very partial success of the laryngo-fissure until all the teeth had been extracted, when there was no further hindrance, was very striking.

Sir JAMES DUNDAS-GRANT asked whether any members who operated on cases of the kind had ever attempted to allow them to heal by the open or partially open method. He was interested to note that when Mr. Trotter did a lateral pharyngotomy he stitched the deeper parts, but only partially closed the superficial part, so as to permit of the escape of secretions.

The Care of Diseased Conditions of Pharynx, Larynx, and Mouth.

Dr. CHARLES MAYO delivered a short address on this subject. He said that brief immersion of the unfertilised eggs of some lower types of life into sea-water to which had been added 1 per cent. butyric acid resulted in their fertilisation to a high degree, and this was interesting as showing the chemical side of stimulus to cell growth. In thinking of infection by a particular kind of organism it was well to inquire also what was the chemical composition of it and its place in the world. Warts and papillomata of mouth, vocal cords, bladder, rectum, and other parts, if irritated and subjected to ineffectual attempts at removal, became liable to malignant development. During the last two years in America there had been many cases of chronic hiccough, lasting three or four weeks. From the pharynx of these cases material was obtained which, when injected into rabbits, caused the same type of trouble. In people suffering from the somnolent form of encephalitis there was a redness of the pharynx, and as it was likely the mucous membrane of this region was very suitable to the causal organism, more attention should be paid to the mouth region in this disease. He believed that in his father's day ordinary clinical observation was carried to a higher perfection than in these days of elaborate laboratory and other aids. Sometimes the examination of a patient by the doctor did not include that of the tongue. The powers of observation to-day seemed to be slipping away. The large tonsil was never responsible for anything more than temporary trouble; the intermediate and the small tonsil were the danger, for in their crypts, unsuspected, they were harbouring an infection which was constantly being put into the blood-stream. The killing of tooth nerves by the dentist and the filling and crowning prevented the patient from feeling the danger-signal of pain when he had a septic focus in this region. In America there had recently been a tremendous increase in heart disease and in infections, and post-mortem examination seemed to show that much of this was fundamentally due to the teeth. Work had recently been done at Rochester on the production of stone in the kidney. Germs obtained from the grinding of bicuspid teeth of 12 people suffering from stone in the kidney were injected into animals, and in three months the X rays showed the beginning of most beautiful apical cavities in the bone, and in seven to nine months the rays showed stones in the kidney, of the same composition as those taken from the human subjects. In middle and late life people had troubles which were not due to pure infection, but to alterations of blood found at that period. Calcium was a great necessity, and he would like X ray pictures to be taken of teeth and jaws not only to see the amount of infection, but also as to the way Nature was handling her calcium in infected areas. There were periods of life in which we were resistant to certain infections. When a break came, a change was seen in the person's colour and appearance, so that it was not uncommon to see an old friend who seemed to have gone to pieces in the last two years due to a "blood break." The leucocytes of such a person would probably be found to be down to 55 per cent., or anything from that to 70 per cent. Inheritance was really a question of the degree of resistance, and how long the movable soil, the blood, could be maintained at the high degree of efficiency which enabled it to deal successfully with infections. A study of family history supplied an inkling as to what had specially to be contended with. After 40 years of age a trouble arose to which very little attention had been paid. In the case of every man over 15 massage of the prostate and seminal vesicles gave a fluid which contained one to three varieties of bacteria, not gonococci. And a woman who had a very large cervix was carrying organisms not in the mucous membrane—though two or three varieties were there always—but just behind the mucous membrane. It might be the type of germ which would produce fibroids, as he did not doubt that fibroids were produced by chemical irritation originating in bacteria which did not raise the temperature. One should not give up treating cases of rheumatoid arthritis and chronic conditions of the nervous system without testing and investigating in this newer field—the cervix in women, the prostate and the seminal vesicles in men.

Speech After Laryngectomy.

Prof. BURGER read a contribution on the means of restoring to patients whose larynx had been completely removed some measure of speech, and brought with him a male patient on whom this operation had been done, for the meeting to judge of the effects of the means employed. Prof. Burger formed a pseudo-glottis at the mouth of the œsophagus, and during quiet respiration the mouth of the œsophagus was always wide open. The patient gave a remarkable demonstration of his powers—modulating his low-pitched voice, whispering, whistling, smoking, and ejecting the smoke through his nose, &c.

fatigue, such as after going upstairs, the voice was appreciably weaker. His efforts were far less successful when he was not wearing a stiff collar to give support to the neck. After each few words the act of swallowing had to be carried out.

Mr. Lionel Colledge demonstrated the McKenty-Western artificial larynx, and exhibited two patients who were using it. A pad fitted over the opening of the trachea was fixed in position by means of tapes, which were passed under the axillæ and round the neck. In other respects this artificial larynx closely resembled that of Dr. Tapia, except that the chamber was a little larger than his, and there was a screw by which the tension of the membrane could be adjusted. He described the operations which were done on the two patients, one last year, the other four years ago.

Mr. R. Graham Brown (Brisbane) also exhibited an artificial larynx. He said the great difficulty in these cases was to overcome the escape of saliva around the opening of the artificial larynx. So great was the discomfort due to this that most surgeons were content to do without aids to voice production. By means of the apparatus now shown an excellent voice resulted, which filled an ordinary room, the apparatus was cheap, and there was very little escape of saliva over long periods. The speculum was of gold, as silver was subject to erosion.

Dr. Tapia showed his apparatus which he designed for the same purpose. He said the ideal of function was to speak without the help of apparatus. He had several patients who, after laryngectomy, could speak as well as Prof. Burger's patient. By means of his own apparatus patients could speak correctly on the third day. One, a lawyer, continued in the practice of his profession without any unusual fatigue. Dr. Tapia and his son proposed to make a subcutaneous tubular connexion between the neck and the mouth to replace the tube which the patient now placed in the mouth.

Sir James Dundas-Grant showed a young female patient whose larynx he removed two years ago and who now had no voice whatever. She had, however, such remarkably clear articulation that she could be well understood and was able to do her own shopping without writing her wishes.

Prof. Burger, in reply, said his patient was not an exceptional case, and the mechanism of speech was the same as that in the normal man.

Tracheotomy in Tuberculous Laryngitis.

This subject was dealt with in a paper by Dr. Ritchie Rodger. In November last, he said, in a discussion at a meeting of the Section, Sir StClair Thomson suggested the more frequent use of tracheotomy in cases of tubercle of the larynx. Dr. Rodger now narrated four cases in which tracheotomy was urgently called for in order to avoid a fatal issue. The root treatment of tuberculous disease in all parts of the body capable of movement was to place the affected parts in a state of physiological rest as far as possible. Resting the voice completely was very important in laryngeal tuberculosis, but there was a movement of the larynx during every act of deglutition also, not only in taking food, but in swallowing saliva, as well as the usual small movement during respiration, and closure of the glottis during a number of forced muscular actions. Records given by Sir StClair Thomson and others showed that the normal lung was not prejudiced by the wearing of tracheotomy tubes. He agreed, however, that a patient wearing such a tube found difficulty in getting rid of his sputum. When the disease involved only the mucosa there seemed no reason to expect that the wearing of the tracheotomy tube would have to be continued for very long.

Sir James Dundas-Grant thought that in the cases described by Dr. Rodger the procedure of tracheotomy was called for and was fully justified. But one would hesitate to do it where there was no serious stridor or obstruction. Much would depend on the condition of the patient's lungs, and if they were only slightly affected tracheotomy could be done. The maintenance of absolute silence gave extraordinarily good results in many cases of this disease.

Mr. E. D. Davis said he and his colleagues always tried to avoid tracheotomy for the condition for two reasons. One was because the tracheotomy wound became very septic, and the other was that the patient had a good deal of coughing, and it was this which did most damage to the larynx. Rest was the most important necessity.

Sir StClair Thomson said he considered that tracheotomy, as a curative method, was seldom called for in tuberculosis. In 450 cases of tubercle of the larynx at Midhurst Sanatorium, he had had to do tracheotomy for dyspnœa to save life only two or three times. One patient, a doctor, declined it when it was recommended to him, but later he had to have it done, and shortly afterwards he died. People could have tubercle and die of it without tubercle bacilli being found in the sputum.

Dr. P. Watson-Williams said tracheotomy gave much relief in this disease when there was considerable dyspnœa, but he had never seen a case in which one could imagine it would be a means of saving life for more than a short time. He thought the disadvantages alluded to by the reader of the paper outweighed such advantages as could be attributed to tracheotomy.

Dr. Douglas Guthrie spoke of a case in which a woman with advanced tuberculosis of the lungs was in danger of asphyxiation in the early stages of labour. Tracheotomy was performed four hours before the birth of the child, and the subsequent course of the labour did not seem to have been adversely influenced.

Intranasal Dacryocystostomy.

Dr. J. S. Fraser (Edinburgh) read a short paper on this subject. He said that often patients with dacryocystitis did not come for treatment until the disease had reached an aggravated form, with much dilatation of the sac by muco-pus, or with a tear-sac abscess. Dilatation of the tear passages by frequent probing was mostly ineffective, and only moderate success attended the use of drainage threads. Most ophthalmic surgeons seemed to prefer to excise the tear-sac completely; but following this there was persistent eye-watering. Dr. J. V. Paterson, of Edinburgh, found the best results followed the intranasal operation. In 47 operations the duration of the dacryocystitis varied from three months to 20 years, and most of the patients were between 30 and 50 years of age. The majority of the patients had had previous treatment by dilatation of the punctum and canaliculus, washing out of the tear-sac, and the passage of probes into the nose. The trouble had probably been due to infection having passed up the nasal duct into the nose. Dr. Fraser described the operation in detail. No after-treatment was necessary, and the average stay in hospital was only four days. Recurrence of the dacryocystitis took place in about 25 per cent. of the cases, and when this was less than two months after the operation it was due to failure to remove enough of the inner wall of the tear-sac.

Mr. J. B. Horgan (Cork) said he had been doing for a period of 12 years the operation Dr. Fraser had described, and his experience corresponded in the main with Dr. Fraser's. But he did not do it under general anæsthesia; he put into the sac a few drops of cocaine and adrenalin solution. He found it a considerable advantage to resect the anterior part of the nasal septum in every case; it gave to the operator a better field, and no harm seemed to come of it. The stenosis met with in the naso-lacrymal duct he believed to be due to a latent infection of the anterior ethmoidal cells. He showed the instrument he used.

Mr. Lawson Whale considered that if it was felt necessary to resect the septum, this should be done as a separate preliminary operation, never at the same time as the primary one. Pressure on the inner canthus should not be by the finger, as mentioned; it was much better to use a large-sized bone probe for forcing the bone. To obviate slipping, he had devised an instrument like a golf mashie, but turned back the wrong way. His own criteria of success were: That if after the operation the eye never watered in a strong wind outside, it was a complete success; if it did not water except in a strong wind, it was a modified success; if it watered at all, even indoors, it was a failure.

Mr. A. J. M. Wright (Bristol) contended that there was no need to do the septal operation at a time other than that of the primary operation.

Mr. J. W. Harrison said the bone should be removed in only thin pieces. Otherwise there would be splinting and extra granulations formed. His practice was to make a large hole from above downwards, then re-formation rapidly took place. The operation should not be done when the condition was in an acute stage, but when it had definitely begun to subside.

Mr. E. D. Davis said his colleagues at the Westminster Ophthalmic Hospital were not very satisfied with the results in these cases, especially those which had an acute suppuration of the lacrymal sac. And the chronic cases were liable to have stenosis of that sac, and the operation had to be done again.

Dr. Graham Brown, speaking as both an ophthalmic and a nose surgeon, said he had no compunction in doing the external operation. There were considerable difficulties connected with the internal operation. He did the operation under local anaesthesia.

Dr. Fraser, in the course of his reply, agreed with Mr. Whale's criteria, and said the cases he classed as successes had no watering of the eyes in any weather, either indoors or out.

The Sinus Condition in Encephalitis Lethargica.

Dr. A. Lowndes Yates, in a paper on this subject, said that in the cases investigated the pneumococcus or the bacillus of Friedländer was usually found, and in all the patients there was rhinitis and sinusitis generally affecting the mucous membrane in or around the posterior group of sinuses, chiefly the sphenoidal. The membrane seemed to have lost its function, there was ciliary paralysis, and fluid put into the posterior part of the nose was not removed by the ciliated epithelium. Mucus was absent, and the sinus contained a material, not colloid, resulting from the digestion of the normal mucus by bacterial action. There were comparatively few sufferers from encephalitis lethargica, but many carriers. The filter-passing virus seemed to need to fall upon mucous membrane which had been altered by influenza or chronic rhinitis in order to produce the symptoms of the disease. Treatment of the nasal condition by eucalyptol and paraffin seemed to have been distinctly beneficial and was worth a trial.

Dr. P. Watson-Williams regarded this as pioneer work, and said it was necessary to carry the work further before one could feel one was on sure ground. One real difficulty was to be sure of the diagnosis of encephalitis lethargica.

Demonstrations.

Dr. Logan Turner and Dr. F. E. Reynolds submitted a contribution illustrated by a number of slides to show the path of infection in a case of nasal furuncle which led to thrombosis of the cavernous sinus. The patient's temperature reached 106° F., the eyeballs were immobile, and he died after a fulminating illness of only seven days' duration. The post-mortem examination showed that the frontal and the maxillary sinuses were normal and that a septic thrombus of the superficial plexus, passing into the ophthalmic vein, led to the detachment of a small septic thrombus, which was caught up in the cavernous sinus and caused a septic thrombosis. Dr. Reynolds demonstrated the photo-micrographs.

Mr. Colledge gave an instructive demonstration by kinematograph of an experiment carried out on a gibbon by Sir Charles Ballance and himself. Anastomosis of the phrenic nerve restored the mobility of a cord which had been paralysed.

Clinical Cases.

At the afternoon session a large number of cases were demonstrated and discussed.

Dr. Douglas Guthrie showed a man, aged 30, with a tuberculoma of the tonsil. He had never had tonsillitis nor any chest symptoms. Wassermann was negative. The tumour was dissected out and was limited by the tonsillar capsule. It was of the size of a walnut. The microscopic section exhibited revealed chronic fibrosis and numerous typical tuberculous deposits.

Dr. Jobson Horne showed a man, aged 63, who had complained of his throat for ten years, but there was no voice impairment. Pharyngitis explained the throat symptoms. On the right vocal cord was an excrescence, and on the left cord, at the vocal processes, a dimple.

Sir James Dundas-Grant showed the specimen of an extrinsic laryngeal epithelioma which Mr. Wilfred Trotter removed from a man aged 57.

Mr. C. A. S. Ridout exhibited a male patient, aged 53, on whom he did a laryngo-fissure for squamous-celled carcinoma of the left vocal cord in February, 1922. A recurrence five months later was removed by complete laryngectomy preceded by tracheotomy. The patient had since remained in excellent health.

Mr. Herbert Tilley showed a man, aged 20, whose tracheal stenosis following diphtheria in infancy had been treated by a dilator formed by fine air-filled drainage-tubes. With the cannula corked the patient could breathe through the larynx for five hours at a time. He also exhibited a female patient whom he had cured of tuberculous laryngitis by means of galvano-puncture.

Several cases were also shown by Mr. Lawson Whale, Mr. F. F. Muecke, and Dr. Dan McKenzie.

MEDICAL SOCIETY FOR THE STUDY OF VENEREAL DISEASES.

A meeting of this Society was held at the rooms of the Medical Society of London on May 29th, Colonel L. W. Harrison, the President, in the chair, when the subject for discussion was the

Diagnosis and Treatment of Venereal Diseases in Pregnancy.

Sir Henry Simson, in opening the discussion, said he hoped chief attention would be devoted to gonorrhœa in pregnancy, as it had received less attention of late than had the complication of syphilis.

Gonorrhœa in Pregnancy.

Dealing first with gonorrhœa, he said that a woman who contracted gonorrhœa at the same time as she became pregnant could be considered lucky so far as the disease was concerned, because the path to the peritoneal cavity soon became closed, and valuable time was allowed for the cure of the gonorrhœa before parturition took place, and mostly, when adequate treatment had been given, a normal child was born at due time. It was a different story if a woman became pregnant subsequent to contracting gonorrhœa, and these were the cases which were so often seen at the V.D. clinics. Here the woman had had gonorrhœa for some time, but, with douching and permanganate irrigation, she had remained comfortable. When pregnancy set in, the congestion and the reactions of the pregnancy immediately set up an acute recrudescence in her of the gonorrhœa. The disease was now no longer confined to the vagina, the whole cervical canal was involved, and probably the uterine cavity too. And such a woman was more difficult to treat and was very liable to miscarry. Miscarriage was a very serious complication of gonorrhœa. In a nulliparous unmarried woman gonorrhœa was an eminently curable condition; there was no husband to treat, and intercourse was easily prevented. It was of the utmost importance to cure these women before they became pregnant. Over 75 per cent. of cases of pelvic gonorrhœa were in women who had become pregnant with an uncured gonorrhœal vaginitis. Whenever a pregnant woman complained of leucorrhœa it was essential that she should be examined most carefully so as to exclude gonorrhœa if possible: this was the stage at which the diagnosis should be made and when treatment was most hopeful. The most likely place in which the gonococcus was to be found was in Skene's tubules and in the urethra, and it should be sought by direct examination of a specimen obtained by the platinum loop; it would be useless to send specimens to the laboratory as the organisms would not survive.

Ambulatory Treatment.—When a pregnant woman was found to be suffering from gonorrhœa, it was unavailing to attempt ambulatory treatment; the patient must be kept in bed for at least three weeks. The disease might then be cured before the pregnancy came to an end.

Syphilis in Pregnancy.

Sometimes a woman gave birth to a syphilitic child without herself having had obvious symptoms of the disease. On the other hand, pregnant women sometimes had very severe secondary syphilis. He still believed that fœtal infection was not always transplacental. There were four classes of cases to be dealt with. In the first class a woman contracted syphilis at the same time as she became pregnant, and in the second she contracted the disease subsequently to becoming pregnant. In these kinds of case the fœtus was infected through the placenta, and the woman had been infected by a man when he was suffering from a primary sore or from secondary syphilis. In the third class of case the woman had had syphilis some time before becoming pregnant, and when the latter event occurred she showed no fresh symptoms of syphilis. Here also she infected the fœtus through the placenta and gave birth to a syphilitic child, although her husband might never be infected. In the fourth class the same sequence held good. A man was an old syphilitic; he might live with his wife for a year without infecting her, but when she became pregnant the embryo was syphilitic through parental infection. The symptoms of the disease in the mother were markedly modified and were often difficult to detect. From the standpoint of the public health it was very important to ascertain what was the result of treatment in these four classes of case. What was likely to be the result of treatment on the fœtus? The prognosis in regard to the fœtus in the first and second classes he considered to be much better than in the third and fourth. If a woman with acute secondary symptoms were properly treated before the fifth month of her pregnancy she was almost certain to have a healthy child with a negative Wassermann. And a woman infected after the third month of pregnancy would probably have a healthy child, as the shortness of time and the placental barrier protected the fœtus. Were the cases of juvenile general paralysis likely to be more numerous because an 80 per cent. mortality from infantile syphilis could be prevented?

Gonorrhœa and Pregnancy.

Mr. ALECK BOURNE said he saw the patient with venereal disease who was pregnant because of her venereal disease, and his remarks would be confined to pregnancy complicated by gonorrhœa. In pregnancy there were two sharply defined types of gonorrhœal case. One was the acute case, in which the patient contracted the disease after becoming pregnant. In these there was frequently an acute vulvitis, with œdema of the labia, a muco-purulent discharge, pain, frequency, and smarting in connexion with micturition. This type was less frequent than the chronic type, in which there was but little exacerbation of the condition of gonorrhœa, and the patient had perhaps been infected for years by the gonococcus before becoming pregnant. In this form his experience had been that after a few weeks of pregnancy the gonorrhœa had settled down, the symptoms disappeared, and it was very difficult to detect the condition by clinical methods. It was commoner to find the gonococcus in patients who had only a mucoid discharge than in those in whom the discharge was purulent. If a specimen taken from the patient was positive in regard to gonococci, the cervical canal was swabbed out with a 10 per cent. solution of formalin; this was a very penetrating solution for the tissues, and was a very efficient bactericidal agent. The vagina was swabbed out with picric acid and the urethra with protargol. An aid to the diagnosis of gonorrhœa in pregnancy was the effect of treatment—i.e., the rapidity with which the discharge cleared up under treatment. A large number of patients with uncured gonorrhœa in pregnancy went through their gestation and puerperium without anything abnormal occurring except, perhaps, a transient rise of temperature during the puerperium, and a little sapræmia. But in others there seemed to be a good deal of danger to the patient, though in actual fact the danger in pregnancy was slight. The uterine ostea and Fallopian tubes were closed at an early stage of the pregnancy and the peritoneal cavity was thus sealed off. The only case of general gonococcal septicæmia during pregnancy he had seen was that of a patient who became infected with the disease during her pregnancy, and she died of the generalised disease. After labour the child's eyes were treated with a 1½ per cent. solution of silver nitrate, which was on the strong side; perhaps 1 per cent. was equally good. His experience was that the gonococcus only gave rise to acute salpingitis if it was accompanied by the streptococcus. If the gonococcus alone was responsible for a salpingitis, his view was that it came on much later than the seventh day of the puerperium.

Dr. DOROTHY LOGAN spoke of her experiences at the Mothers' Hospital at Clapton, where mothers came in for their confinement. They entered the institution three or four months before the event and stayed for some time afterwards. An acute case of venereal disease in pregnancy was put to bed. A routine treatment for the gonorrhœal cases was to swab well with protargol. Combined with glycerine she had found it most useful. A pack of 10 per cent. protargol was left in situ. In dirty cases this treatment was applied twice daily. She did not pack the cervix, but applied protargol as high as she could. Cases seemed to clear up better, on the whole, if the treatment was reinforced by vaccines. She had not seen many cases of acute complication in the tubes, nor of sepsis associated with pregnancy. Cases of venereal disease treated for some time before labour showed, on the whole, less morbidity in the puerperium than cases not so dealt with. The gonococcus was more frequently found in the apparently clean cases than in the cases which had a greenish purulent discharge, particularly after confinement.

Dr. MARGARET RORKE agreed that the serious cases mostly showed streptococci and staphylococci associated with gonococci. These cases seemed to do well up to a point, beyond which they seemed to progress no further. At actual delivery there was very little trouble, and little or no rise of temperature occurred. She had noticed, however, that though the mother was kept in bed 12 or 14 days, and the child was fed at the breast, the gonococcal cases did not involute as the ordinary uninfected cases did, the uterus remaining large and bulky for weeks afterwards. And many of these cases tended to have retroversion, which aggravated the menorrhagia. The third class of cases to which Sir Henry Simson referred had been found in her hospital to be a tiresome class. There was a large class who during the war became infected with syphilis, had only a moderate amount of treatment, who married subsequently and would be having children. These, not knowing the disease was still present, would not have treatment during pregnancy, and there was likely to be a crop of syphilitic children. She had a great liking for lactic acid in gonorrhœal cases. She had so far hesitated to use milk injections in pregnancy.

The PRESIDENT said he was glad to hear it advocated that the woman who showed signs of leucorrhœa during pregnancy should be examined culturally and bacteriologically. That advice he would like to see broadcast throughout the country; it would do much to clear up gonorrhœa in a general way and to lessen the incidence of ophthalmia neonatorum. Also, was it not likely to prevent some of the puerperal morbidity? The association of the streptococcus with the gonococcus in puerperal tube trouble was a matter of considerable interest. He supported Dr. Logan's view that women suffering from gonorrhœa who had been treated steadily throughout the period of their pregnancy did extraordinarily well during the puerperium. If this course were more general, a good deal of puerperal mortality would probably be prevented, for that was so often due to streptococci which were able to gain a footing and flourish because the soil had already been prepared for them by the gonococcus. All these facts strongly supported the contention that every woman who was found to be suffering from leucorrhœa should be thoroughly examined. And in that investigation he advanced a strong plea for taking cultures; for very often a slide showed a negative result when cultures gave a positive one. At St. Thomas's Hospital the cervical canal was not touched during pregnancy; the staff there contented themselves with placing pledgets against the cervix, so as to promote the outflow of pure serum. They had a fear of provoking a premature termination of the pregnancy.

The openers briefly replied.

Reviews and Notices of Books.

ENCYCLOPÆDIA MEDICA.

Second edition. Under the General Editorship of the late J. W. BALLANTYNE, M.D., C.M., F.R.C.P.E.; and ALEXANDER GOODALL, M.D., F.R.C.P.E. Vol. XII.: *Tularæmia to Zinc.* Supplement. Edinburgh: W. Green and Son, Ltd. 1925. Pp. 671. 30*s*.

THE second edition of the Encyclopædia Medica is completed with this volume, which contains, besides a number of new and rewritten articles in the substance of the book, a special supplement dealing with the modern treatment of diabetes and an article on respiration by Dr. Whitridge Davies. In the former Dr. C. G. Lambie gives a valuable résumé of the principles governing diabetic dieting under insulin, and a complete diet table which will be of much value to practitioners who have little time to work out calories for individual patients. The article on X rays and radium, by Dr. R. Knox, is illustrated by very beautiful plates.

A large part of the volume is concerned with genito-urinary diseases. Articles on the urachus by Prof. A. W. Shee, on uræmia by Sir Nestor Tirard, on the urethra and venereal diseases by Sir D'Arcy Power, on the urine by Dr. Lambie, on the uterus by Mr. A. E. Giles, Mr. G. S. Davidson, Mr. W. F. T. Haultain, Mr. Comyns Berkeley, Miss Louisa Martindale, and Mrs. Mary Scharlieb, on the vagina by Prof. T. Wilson, and on the vulva by Mr. Giles are included. Of the infectious diseases typhoid, typhus, undulant fever, varicella and whooping-cough, yaws and yellow fever are considered, together with articles on vaccination and vaccine therapy. Public health matters are represented by articles on water and vital statistics. The account of visceral pain by the late Sir James Mackenzie will fulfil the expectations of his disciples. A new short account of vitamins has been provided by Dr. Marshall Findlay. An excellent account of urticaria by Dr. J. M. Macleod is a new feature in this edition, as is also the article on unconsciousness by Dr. T. Hyslop.

The concluding volumes of this work have not been allowed to suffer through the death of the editor chiefly responsible for the earlier ones, and it can be recommended as a balanced encyclopædia of the medical knowledge of our times.

ANÆSTHESIA.

Second edition. By J. T. GWATHMEY, M.D. London: J. and A. Churchill. 1925. With 273 illustrations. Pp. 799. 25*s*.

Dr. Gwathmey's book is well known on this side of the Atlantic. The present edition is continued on the lines of the first, but with certain important omissions which, in our opinion, greatly improve the volume. The original book was not easy to read, partly, no doubt, because of that lack of continuity which is inevitable where many collaborators take part instead of a single author, but partly, also, because it was overloaded with statistics, a feature nowhere less satisfactory than in a work on anæsthetics. The statistical chapter is omitted entirely in this edition. There is less justification for removing the chapter on mental influence and hypnosis, for these processes have much theoretical as well as some practical value. Important new matter has been added. Synergistic analgesia and anæsthesia, with special reference to magnesium sulphate, receive a chapter to themselves, as is natural with a branch of work for which Gwathmey has been mainly responsible. By synergism the author denotes the reciprocal augmentation of the action of one drug by that of another. He contends that the effect of the synergistic action of drugs is not due to a simple summation of similar pharmacological actions, but we confess to finding no proof of this assertion; indeed, it appears to be a proposition highly difficult to demonstrate. When a condition of analgesia or of anæsthesia is produced by the combined action of two or more drugs, each of which can alone produce the condition to some extent, how are we to know to what exact extent each drug is responsible in the state finally obtained by their combined action? With regard to magnesium sulphate, it is interesting to read that subarachnoid injection produces in animals nearly immediate anæsthesia and paralysis of the extremities.

Details are given of laboratory experiments in a chapter which contains one observation which will puzzle many readers: "The fact, well known to anæsthetists, that nitrous oxide, the least harmful of the general anæsthetics in its effects upon the tissues and organs of the body, is dangerous when used alone." It is generally held, we believe, that apart from asphyxia nitrous oxide alone is free from danger. The technique of synergistic anæsthesia is elaborate and involves so many hypodermic and rectal injections that its advantages should be very great to justify the amount of manipulation to which the patient is subjected. However, Rector, after his experience of 2000 cases, is well satisfied with the method. Meltzer found that the heart remains normal during anæsthesia from magnesium sulphate, and that the danger of this agent is its effect on respiration. In synergistic anæsthesia it is used in 4 per cent. solution, some 200 to 400 c.cm. being instilled by hypodermoclysis. A fatal case is quoted from Curtis after 310 c.cm. of a 4 per cent. solution, but Gwathmey disagrees with Curtis as to the cause of the death, because the post-mortem examination revealed profound changes in the liver, and these do not occur in laboratory animals even when magnesium sulphate is given in sufficient volume to kill.

The general physiology of anæsthesia is fully discussed in a chapter of over 60 pages, and special chapters by collaborators are on local anæsthesia as applied in dentistry, on the use of rebreathing (W. B. Gatch), on intravenous anæsthesia, and on ethylene anæsthesia. With regard to the latter drug A. P. Luckhardt states that it is the anæsthetic of choice for elderly subjects undergoing urological operations. and also for diabetics. Over 1100 cases without fatality are reported. Oozing from the wound and the explosibility of the gas are given as the two chief drawbacks to ethylene.

This edition should prove popular to readers in this country as well as in the United States.

MIDDLE AGE AND OLD AGE.

By LEONARD WILLIAMS, M.D. London: Humphrey Milford. Oxford University Press. 1925. Pp. 296. 10*s.* 6*d.*

IT is in the very nature of technology, no matter in what science or art, that it should itself be dull. This must be so, and the sensible writer will not try to offend the natural order of things by forcing a breeziness of style into his technical description that has no right to be there, but will be as brief and accurate as possible and keep his humanity for the application of his hard-won knowledge to the problems of human life. For his general observance of this working rule Dr. Leonard Williams deserves praise. His book is not technical as medical works go, but a considerable amount of technique has been skilfully inserted into his essay, never too much at a time; when, however, he is for the moment released from it his style becomes delightful.

It is unnecessary to remind our readers that Dr. Williams is first and foremost a dietitian; he is, secondly, a bold and humorous lover of controversy; and, thirdly, from his years of experience as medical adviser to a large life insurance company, he has learnt a great deal about the pathology of old age. These three qualifications make him peculiarly fitted to write on such a subject as middle age and old age. He explains in his preface that, since the subject of old age is inseparable from the condition of middle age that introduces it, and since a complete survey of these two states would amount to an exhaustive study of medical practice, his book is a compromise, its object being to show the best way to a happy old age and the most useful weapons against the diseases that beset middle age. In the second half of his aim he has attained a considerable measure of success. He has discussed clearly and well every one of the common ailments that cause so much suffering to those who have passed their prime, and he has drawn on the latest result of research, notably in the treatment of diabetes, carcinoma, and chronic intestinal stasis, in order to arm the practitioner with the means of helping his patient over this exacting period.

Whether he has been successful in his first aim is a matter open to question. Dr. Williams sees chronic intestinal stasis as the supreme enemy of the aged and the first cause of every one of the troubles incident to that stage of life. The stasis is, he argues, directly due to the action of toxins, which are present in intolerable force owing to excessive and unsuitable feeding during the whole period of active life. They fortify their attack by causing kinking and distortion of the colon, and they work the endocrine system to an early retirement, thus completing the vicious circle. Therefore, if we would live long, our bill of fare must be drastically revised, both for quantity and quality. Dr. Williams attacks our four meals a day so effectually that scarce one survives. We may have a continental breakfast, with honey if we are good; a bread-and-cheese lunch, with the concession of some harmless egg dish, if we must; he will not hear of afternoon tea, that real and never-failing comfort of the elderly, and even dinner is not spared from this ruthless savagery; our butcher's meat is replaced by expensive fish or game, and our beloved puddings are gone, never to be restored. We may have fruit salad, but no sugar with it, for cane sugar is a disaccharide and quite indigestible. A cheese savoury or something equally harmless is allowed to round off the meal, but we ask in vain for our cup of coffee. We may have alcohol in the strictest moderation at this meal alone. His salads, while distinctly attractive as a supplement to our ordinary meals, horrify us as substitutes, and his three-day fasts and venesection (his advocacy of which is affectionate almost to gloating point) bring home to us the inner truth of the saying, "Those whom the gods love die young."

We cannot dispute the accuracy of a single one of Dr. Williams's statements, yet we doubt whether old age at such a price is worth having. But the real value of the book is unquestioned, if only for its admirable chapters on the endocrinology of middle age and the climacteric in women.

CANCER PROPAGANDA.

Cancer and the Public. By CHARLES P. CHILDE, B.A., F.R.C.S., M.R.C.P.E., Consulting Surgeon, Royal Portsmouth Hospital. London: Methuen and Co., Ltd. 1925. Pp. 267. 10*s.* 6*d.*

IN this book, which is dedicated to the public, the author has presented those practical aspects of the cancer problem which are of special interest to the public in such a way that they can be understood by every intelligent reader. He emphasises in particular that cancer is a curable disease if treated surgically in its earliest stages. He points out that cancer has no characteristic symptoms and that therefore the disease, especially in its earliest stages, cannot be diagnosed with certainty except by microscopic examination after operation. He indicates the various "danger signals" that may make us suspicious of the presence of cancer, and urges the public not to delay in asking for medical advice if any of these symptoms are noticed. He disposes of the various fallacies and errors which have come to be associated with cancer in the public mind, such as the relation of cancer to diet, and he concludes that cancer is not infective and that cancer-houses are a myth. He also discusses the limitations of radio-therapy.

The book is written in such a lucid and sane manner that it could be recommended without reserve were it not that in the concluding chapter Mr. Childe raises a highly controversial subject in pleading for establishing a cancer propaganda based on the model of the American Society for the Control of Cancer. This question was discussed a year or two ago at the Royal Society of Medicine without meeting with general approval. This is not the place to discuss the objections to such a propaganda: it must be sufficient to say that they are based on more substantial grounds than indifference and lack of initiative on the part of the medical profession, as the author suggests. It is unfortunate that a book of 260 pages of large print without expensive figures or tables, which is intended for the instruction of the public, should be published at such a high price as half a guinea.

The Conquest of Cancer. By H. W. S. WRIGHT, M.S., F.R.C.S. With an Introduction by F. G. CROOKSHANK, M.D., F.R.C.P. London: Kegan Paul, Trench, Trübner and Co.; New York: E. P. Dutton and Co. 1925. Pp. 86. 12*s.* 6*d.*

THE lesson which Mr. Wright emphasises throughout this convincing little book is the good prospect of cure by surgical means of a patient suffering from cancer at an early stage. It is indeed to those patients who are not consciously suffering anything but the inconvenience of a persistent pimple or the irritation of a small ulcer, and to their friends, that his propaganda is chiefly addressed. There is a breezy optimism throughout the volume which adds considerably to its value for lay reading, but hardly ever is the author led by his enthusiasm to protest or to promise too much. The importance of chronic irritation as a factor in the ætiology of cancer is now generally admitted; the author regards as equally important "the presence of an acid environment" (p. 51), but does not explain the grounds on which he bases this impression. The use of the term precancerous stage is not well-advised, since until malignant cells are actually visible in a microscopic section of a tumour or ulcer it is not possible as yet to recognise any lesion which will assuredly give rise to them. In discussing X ray and radium therapy, other than palliative, Mr. Wright points out that no figures are of any value till seven years at least have elapsed after treatment. The dictum as to a seven years basis for reported cures should be noted by surgeons, who are too apt to regard three years as a sufficient margin. Most of the highest authorities on radio-therapy are, however, agreed that in operable cases surgery should be the first resort.

It is no easy task "to enlighten the laymen, that their help may be enlisted, and yet to avoid alike exaggeration and smooth sayings, false hopes, and false fears" on such a controversial subject as the conquest of cancer. Dr. F. G. Crookshank introduces Mr. Wright to the public as one who has performed this task fairly and lucidly, and we agree with the verdict.

New Cancer Facts. By DAVID MASTERS. With an Introduction by Sir JAMES CANTLIE, K.B.E., F.R.C.S. London: John Lane, The Bodley Head. 1925. Pp. 81. 2s. 6d.

Mr. Masters, who has been successful in fascinating a large number of readers with the romance of excavation and the wonders of salvage, has more recently attempted to present in equally attractive form steps in the conquest of disease. His latest book, under a title somewhat too precise, is largely devoted to special pleading on behalf of the parasitic theory of cancer, of which he is a spirited if not very judicial advocate. Indeed, his enthusiasm would seem to have been aroused less by the theory in abstract than by the personality of Dr. Louis Sambon. It is with the conclusions of this observer, from work in Italy and Iceland, that the book is largely concerned; attempts by Dr. James Young and by Dr. Glover to demonstrate the causal parasite are held still to be unproven. Brief mention is made of the filter-passers wherefrom Peyton Rous was able in 1911 to produce sarcomata in chickens. The recent repetition and extension of this important work by Dr. W. E. Gye in this country, reported in last week's LANCET, may well lead to a reconsideration of the parasitic theory of cancer from an entirely new aspect. It may be long, however, before such definite conclusions are reached as can be set out with profit in a small handbook designed for the layman. The problem is unfortunately less simple than it appears to Mr. Masters.

LECTURES ON PATHOLOGY.

By LUDWIG ASCHOFF, M.D., Professor of Pathologic Anatomy, University of Freiburg. New York: Paul B. Hoeber. 1924. Pp. 365. $5.

THESE lectures were delivered by Prof. Aschoff in America during the spring of 1924. They are 14 in number and deal with a variety of subjects, including the pathology of gall-stones, the pathological metabolism of fat, the goitre problem, the pathology of gastric ulcer, the parthogenesis of human pulmonary consumption, and the reticulo-endothelial system. Prof. Aschoff is one of the greatest living authorities on morbid anatomy, and has particular claims to speak on the subjects he has chosen. The publication of these lectures in book form will, therefore, be welcomed by all pathologists. Freed from the dogmatism which the writer of a student's text-book must maintain, Prof. Aschoff is able to deal with his matter with breadth of view and a wealth of detail which would be out of place in a more elementary publication. Above all, he is able to give his individual opinion full rein, and to indulge in a valuable personal contribution to pathological teaching.

In reading these lectures one cannot fail to be struck by the enthusiasm which has done so much to make Germany the home of morbid anatomy. The author's interest never flags; even during the war he continued to be a student of academic pathology, utilising the facilities afforded by his position as army prosector to make observations which could scarcely have been possible in normal times. The lectures have been rendered by anonymous translators to whom the author gives thanks in his preface, and the occurrence of an occasional phrase like "a comprehensive understanding of this clinically so important disease" bears witness to the fidelity of the translation.

JOURNALS.

QUARTERLY JOURNAL OF MICROSCOPICAL SCIENCE. Vol. LXIX. Parts I. and II.—The two latest numbers contain 15 memoirs on a large variety of subjects by authors nearly all of whom are recent workers in zoology. The exception is an article by Dr. Arthur Bolles Lee, a well-known authority on microscopical technique, who writes upon the chromosomes of *Paris quadrifolia*.—A paper on the development of the skull of the sole and the plaice, with good figures of the young and symmetrical skull, is from the zoological laboratory of the University of Bristol, by Dr. N. J. Berrill.—A short and clearly illustrated account is given by Mr. E. Percival (University of Sheffield) of a new British land planarian, *Rhynchodemus britannicus*, of which a specimen was lent to the author by Dr. Dendy, whose recent death is a great loss to zoology. This animal is one of three species known to be indigenous to this country; one other, introduced from the tropics, is fairly common.—Mr. N. A. Macintosh describes the crystalline style of *Crepidula fornicata* and comments upon this structure in other gastropods, comparing them with the much better known and more generally occurring crystalline style of lamellibranch molluscs. All the contents are of interest.

QUARTERLY JOURNAL OF MEDICINE.—The April number contains the following articles: The Blood-urea and its Estimation in Diabetes Mellitus, by Charles E. Brunton. Observations on the blood-urea and blood-sugar concentration in cases of diabetes treated with or without insulin did not reveal any relationship existing between them. The administration of insulin did not appear to affect the blood-urea content. It was found that diabetic coma is not necessarily accompanied by a high blood-urea figure, and the amount of urea in the blood does not always increase with the duration of the diabetes.—Lymphoblastic Erythrodermia, by James H. Sequeira and Philip N. Panton. An account is given of five cases of a peculiar skin affection characterised by erythrodermia and a specific change in the blood. The blood picture usually shows a secondary anæmia, which may be severe, but the characteristic alteration consists in a relative and absolute increase of the lymphocytes. The authors would for the present place the cases in a special category distinguished on the one hand from other states of erythrodermia, and on the other from leukæmia. The appearances of the skin are shown in two coloured plates.—Changes in the Blood in Anæsthesia, by Dorothy G. E. Potter. It was noted that a fall in the alkaline reserve occurs during the first few minutes of the administration of chloroform and ether anæsthesia. A rise in blood phosphate is also frequently seen, which may be due to the passage of a hexose phosphoric acid compound from the muscles to the blood. It is suggested that the phosphate is mobilised and stored in the liver to assist in the excretion of acid by the kidneys.—The Tolerance of the Body for Urea in Health and Disease, by H. E. Archer and G. D. Robb. The authors describe an interesting series of observations upon the tolerance of the body for urea, which is analogous in some respects to the glucose-tolerance test. The resting blood-urea is first estimated, and observations are made at intervals after drinking

15 g. of urea in water, as in the urea-concentration test. In normal individuals there occurs a rise of 5 to 15 mg. urea per 100 c.cm. blood in 30 to 60 minutes, and the fall to normal is complete in 120 minutes. In renal disease, if the blood-urea is raised and the concentration is also poor, a tolerance test is not required to demonstrate renal inefficiency. In doubtful cases the resting blood-urea is often normal, and the urea-concentration test shows no deficiency. In such instances the urea-tolerance test was found of value, as deficient tolerance was indicated by an excessive rise of over 15 mg., and recovery was not complete in four hours. It is possible that the urea-tolerance test will only show deficiency in the azotæmic type of nephritis.—Calcium and Magnesium in Some Pathological Sera, by Elsie Watchorn. A series of estimations are recorded of the serum calcium and magnesium content. No definite relationship was found to exist between the variations of the two substances in certain diseased states. The calcium content was increased in some and the magnesium in nearly all of the pathological conditions investigated. —The Relationship of Infection to Diabetic Coma, by George Graham. Since the introduction of insulin patients in diabetic coma usually recover consciousness if treated suitably, but despite this death often occurs in a few days. A series of seven cases of diabetic coma are described, in all of which an infection was present. In five of them coma developed before there were any signs of the infection, which, however, became manifest during the insulin administration. It is recognised that insulin is much less effective in lowering the blood-sugar in the presence of an infection, and the possible hypotheses to explain this phenomenon are discussed.—The Spinal Fluid in Encephalitis, by James L. Halliday. Estimations made upon cases of epidemic encephalitis showed a normal fasting blood and spinal fluid sugar content. The spinal fluid sugar was found to rise after a meal, and disregard of the time relationship between the ingestion of food and the examination of the fluid may account for the high sugar content found by many workers on encephalitis and other conditions. In three cases of encephalitis samples of fluid were removed at half-hourly intervals after the administration of 50 g. of glucose. A delayed spinal fluid curve was noted in association with the blood-sugar curve.—Pituitary Obesity in Adolescence, by H. Gardiner-Hill, I. Jones, and J. Forrest Smith. A series of 60 cases is described in which the onset of adolescent obesity was associated with a period of accelerated growth. The various clinical and laboratory methods for the detection of pituitary lesions were carried out, and it was concluded that an early stage of hyperpituitarism finally passes into one of hypopituitarism. Two plates are included, illustrating certain clinical and X ray appearances.—Carbohydrate Tolerance in Myxœdema, by H. Gardiner-Hill, P. C. Brett, and J. Forrest Smith. The sugar tolerance was determined in 15 cases of myxœdema. The fasting level was usually within normal limits, but the blood-sugar curve was higher and more prolonged than in normal persons. As glycosuria rarely occurred, it is suggested that the renal threshold is raised. The general effect of treatment by thyroid extract is to lower and quicken the blood-sugar curve.

PROTOZOOLOGY is the title of a new journal published by the Institute of Agricultural Parasitology of the London School of Hygiene and Tropical Medicine, and is intended to provide a medium for the publication of new work on matters protozoological done at the Institute. The first number, which has just appeared, contains an article by Dr. J. G. Thomson on a species of giardia found parasitic in a helminth parasite of a rodent; an account by Miss M. Triffitt of a sporozoan parasite of sheep in Britain; and a description by the same author of several species of coccidia found in reptiles which have died in the Zoological Gardens. The new periodical will be issued as a supplement to the *Journal of Helminthology*.

PROCEEDINGS OF THE ROYAL COMMISSION ON NATIONAL HEALTH INSURANCE.*

EVIDENCE OF THE BRITISH MEDICAL ASSOCIATION

(continued from p. 1186).

Treatment by Assistants.

(Q. 14736–40.) The number of practices in which assistants are employed is small and the Association has no evidence of insured persons being turned over by the principal to his assistant. Dr. Dain said :—

(Q. 14738.) In the practices with which I am familiar where assistants are employed, the head of the firm and the assistant work equally together. They take consulting hours at the same time and the patient probably goes into the same waiting-room and can choose which doctor she will. It is possible that she may have three doctors working all simultaneously and she goes to see which she likes. She may have the choice of three doctors, being on the panel, although only one of the doctors in such a case might be a panel practitioner.

In one large insurance practice the majority of the patients preferred to see the assistant.

Records.

(Q. 14756–9.) Dr. Brackenbury pointed out that their evidence with regard to the possible uses of the clinical records was to the effect that they might be made of great service in relation to medical research and public health. He agreed, in reply to Sir Humphry Rolleston, that it was difficult to express a considered opinion of the value of these record cards introduced so recently as 1921, but there was a feeling that more use might have been made of them, especially in relation to the public health, and that insurance practitioners generally would like to feel that more was done in this direction.

Hospital Patients.

(Q. 14794.) Dr. Brackenbury refuted the suggestion that panel patients were referred to hospitals as soon as they became troublesome. There was a good deal of misunderstanding in this matter. Patients were frequently referred to hospitals when requiring specialist treatment, and also when their home conditions did not permit of proper nursing. The hospitals had been asked by the British Medical Association to send back to the insurance practitioner cases that fell within his province, and could be equally well treated by him at home as in the hospital, and the hospitals very largely do this.

Dr. Bolam said that it was a general practice now on the part of the larger hospitals to insist that all work which is properly the work of an insurance or general practitioner should not be continuously sent to a hospital.

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* In previous articles the proceedings of the Commission were reported under the following headings: Introductory Note; The Scope of the Insurance Scheme (see THE LANCET, Jan. 31st, pp. 247–8); The Provision of Medical Benefit (Feb. 7th, pp. 301–3; Feb. 14th, pp. 355–6; Feb. 21st, pp. 103–5); Financial Provisions of the Act (Feb. 28th, pp. 454–7); Medical Certification and the Regional Medical Staff (March 7th, pp. 508–9); The Approved Societies and the Money Benefits (March 14th, pp. 564–5; March 21st, pp. 623–4); Evidence of the Hearts of Oak Society (March 28th, pp. 677–9); Evidence of the National Conference of Industrial Assurance Approved Societies and of the Manchester Unity Approved Society (April 4th, pp. 731–3); Evidence of Independent Order of Rechabites, of Rational Association Friendly Society, and of Miners' Societies (April 11th, pp. 784–6; April 18th, p. 839); Evidence of Mr. Alban Gordon (April 18th, pp. 839–40); Evidence of Joint Committee of Approved Societies, of Stock Exchange and Lloyds' Health Insurance Societies, and of Group of Catholic Approved Societies (April 25th, pp. 889–91); Evidence of the National Insurance Beneficent Society (May 2nd, pp. 943–4); Evidence of the British Medical Association (May 9th, pp. 993–5); Evidence of the British Dental Association and other Dental Organisations (May 16th, pp. 1044–6); Evidence of the Insurance Committees (May 23rd, pp. 1097–8); Evidence of Various Approved Societies (May 30th, pp. 1135–6); Evidence of the British Medical Association (June 6th, pp. 1184–6).

References to the paragraphs in the printed statements issued as appendices to the reports of the oral evidence are given thus: "App. X. 69," and references to the oral evidence thus—Q. 1369.

An Income Limit for all Insured Persons.

(Q. 14843–14971.) The Association's proposals include a suggestion that many persons not at present entitled to medical benefit should be brought within the scheme—e.g., dependants of insured persons below a certain income limit and persons at present receiving medical attention under the Poor-law, and that others at present insured should be excluded by the application of an income limit to all workers, manual and otherwise. To facilitate discussion the witnesses indicated £2 10s. a week –£130 a year—as a suitable limit of income below which the dependants of the insured persons might be treated, but they did not in the least wish to be regarded as tied to this figure. The reply to the suggestion that the doctors were really not concerned with the income limit was that the doctors (Q. 14891) have accepted the National Health Insurance scheme, which is so much opposed to their traditions and ways of practice, in order to meet an acknowledged want, and they did not want to see it unduly extended. Dr. Cox said :—

> (Q. 14860.) I think the average doctor would say that the ideal form of medical practice is where the patient can go to the doctor of his choice with his own money in his pocket, and pay for it, the transaction being just between the two . . . . But we know there are people who cannot do it, and you have to provide for them. We do not want, however, to provide for any more of them under a system where the State comes in than we can possibly help.

It was agreed that in regard to manual workers, so many of whom would be in and out of benefit, an income limit would be very difficult to apply, but Dr. Brackenbury suggested that these difficulties should not be insuperable.

It appeared to emerge from the questions on the subject that the title of a person in insurance could only be settled on a record of his past earnings, with the unfortunate result that he would be insured and receiving medical benefit when his income was high and out of benefit when his income was low.

Extension and Coördination of Medical Services.

(Q. 14972–999.) It was the view of the profession that while the numbers of insured persons should be suitably restricted, the provision itself should be as far as possible complete, and that the extended service should be coördinated with the existing public services.

> (Q. 14974.) It would not be mere coördination and bringing under one local administration, but it would mean the practical abolition of some of these services by their absorption in the National Health Insurance scheme. We envisage, for instance, the Poor-law medical service and nearly, if not all, treatment centres—I use the word advisedly—as being no longer necessary if the alternative provision under the scheme were made for the people in that other way. So that it would not be a continued existence in their present form, coördinated, of these services; some of these things would be largely, if not entirely, unnecessary.

With regard to the finance of the extended scheme, Dr. Brackenbury said they claimed that the total national cost would not be much greater than at present.

> (Q. 14976.) We are of opinion that if you take the income of all these different services there would be sufficient income in total to satisfy the whole scheme, except, perhaps, for the bringing in of the new body of dependants. Even the extra cost of bringing in the new body of dependants would have to be discounted in so far as you could thereby abolish the need of treatment clinics under the school or other authorities for those dependants. The total income of money spent upon the public health would be almost, if not quite, enough, I think—as most of us think—to finance such a scheme as we have in mind.

(Q. 14997.) If financial conditions required that a development should proceed by stages, the opinion of a majority of the profession was that extension of the scope of the service should take priority over the inclusion of dependants.

Consultant and Specialist Services.

(Q. 15000–15010.) Dr. Brackenbury emphasised the professional objections to the administration of treatment benefits in any form by approved societies. He also indicated that the various additional services suggested should, with certain exceptions, be available only on the recommendation of the general practitioner, these exceptions being the prescribing of drugs and appliances and extra services by the consultant; and dental treatment.

In the case of dental treatment, an insured person should be able to go direct to the dentist in an emergency. Dental and ophthalmic treatment are merely individual forms of specialist and consultant treatment. As regards all specialist and consultant treatment, the witnesses had no doubt about the necessary supply of doctors being available.

In regard to tuberculosis and venereal disease it was recognised that for some time to come a salaried service was inevitable, but with the progress of medical education the time would relatively soon come when the general practitioner would be able to undertake the medical treatment of these cases with the consultant's services at his disposal in time of difficulty.

Maternity Work.

(Q. 15011–55.) With regard to the proposed inclusion of a scheme for maternity services within the insurance doctor's contract, the question was raised as to how far the increase in maternity fees now charged by doctors was attributable to the increase in the cash benefit to the insured person. The witnesses said that the increase in the fees had no reference at all to this fact, that it was common to insured and private practice alike, and that it was attributable to a variety of causes, not the least important of which was the increasing tendency to call in the doctor's services in difficult cases only.

In the extended service which was proposed, it was made clear that individual doctors should be allowed to exercise the option not to undertake maternity work, which was often that part of a doctor's practice which he would like to give up first, as it involved so great a tie.

(Q. 15088.) Dr. Dain pointed out that in the scheme which they had put in evidence they were offering the insured woman not a choice of the doctors on the panel, but any doctor willing to undertake maternity cases, non-panel as well as panel doctors. Dr. Brackenbury said :—

> We are prepared to guarantee . . . that in every case there shall be a maternity service of doctors in the same way as there is a medical service. I think if the situation was put to the doctors there would be no need for compulsion. They would arrange amongst themselves that there should be such a service for insured persons. I do not doubt it for a moment. I should not mind any legislative power being given to see that there was such a service.

Prescribed Appliances.

(Q. 15061.) The supply of appliances for insured persons was unduly restricted, and this tended to some extent to hamper the doctor in his insurance work. All the appliances that can be described as necessities should be available to the insured person under the doctor's prescription out of the Insurance Fund.

> With regard to trusses particularly and elastic stockings we should regard those as necessities rather than luxuries for the treatment of the patient. We think they ought to be available. It hampers us not to be able to secure them without considerable work and trouble.

Approved Societies' Surpluses.

(Q. 15092–15117.) It was the view of the Association that all treatment benefits should be removed from the control of societies. With regard to the contention that the funds available for these benefits belonged to certain societies, Dr. Brackenbury said that the huge accumulations which were now becoming evident could not have been anticipated by Parliament, and that in so far as they could be attributed to the segregation of good lives into particular societies, this hardly came under the head of good administration giving the societies any real claim to the funds.

Ophthalmic Treatment.

(Q. 15145–55.) Mr. Bishop Harman said that it was important that ophthalmic treatment should include proper medical diagnosis.

The eyes are the one place where you can look into a man's body and see his nerves and blood-vessels and tissues just as though you put your head through the window and looked at this Royal Commission. . . . There are more diagnoses of serious conditions made by the ophthalmic examiner than perhaps by any other specialist.

Dr. Bolam added :—

I have had three instances come to my own knowledge within the last month where spectacles have been supplied by opticians in good faith, the patient going in good faith to the optician. A visit to an ophthalmic surgeon in one case led the surgeon to infer from the eye condition that the patient was suffering from diabetes, and this was found to be the case ; in a second, the patient was found to be suffering from Bright's disease ; and in the third the condition was found to be due to syphilitic disease of the eye. That is just within one man's experience.

Payment by Attendance.

(Q. 15157–15212.) Dr. Stanley Hodgson explained the system of payment in force in Manchester and Salford. The amount available for the area as a whole is the same as under the capitation system of payment, but the doctors are paid by reference to the number of attendances, visits, and special services instead of according to the number of persons on their lists. The bills of doctors who have made apparently an excessive number of attendances are scaled down by reference to the general average, and the bills as a whole have then to be scaled down within the limits of the total sum of money available. He did not think there was much in the suggestion that under the attendance system the insured person felt less compunction in making visits to the doctor, as he doubted whether insured persons were sufficiently aware of the facts.

(*To be continued.*)

Reports and Analytical Records.

GAYMER'S CIDERS.

(MANUFACTURED BY MESSRS. WM. GAYMER AND SON, LTD., ATTLEBOROUGH, NORFOLK. LONDON OFFICES AND STORES, 521–529, HACKNEY-ROAD, E. 2.)

THE undermentioned ciders have been sent to us for examination :—

1. *Sparkling Pommetta.*—A cider of a dry variety produced in the champagne style and made from a special blending of apples in order to obtain a particular character and bouquet.

2, 3. *O.N.S. and N.*—Two dry ciders.

4. *V.D.*—A dry cider ; although not quite so dry as samples 2 and 3. This cider is claimed to possess a special character and bouquet of its own.

5. *Two Star.*—This cider is similar in quality to the V.D. brand, but is slightly sweeter.

6. *Diamond.*—A sweet cider.

When these different brands were analysed the following results were obtained :—

Number.	Specific gravity before fermentation.	Present specific gravity.	Total solids, per cent.	Alcohol, per cent. by volume.	Invert sugar, per cent.	Acetic acid, per cent.	Malic acid, per cent.	Flavour.
1	1061·9	1015·7	6·87	5·55	1·52	0·07	0·75	Full flavour, good palate: not very sweet.
2	1058·6	1016·7	6·31	5·4	1·26	0·02	0·64	Full palate, rather dry.
3	1051·6	1018·5	6·35	4·25	4·53	0·07	0·67	Very dry, fine palate.
4	1055·7	1020·6	7·0	4·55	4·82	0·05	0·61	Fairly dry, good flavour.
5	1052·9	1025·6	7·9	3·55	6·16	0·10	0·56	Good palate, sweeter than No. 4.
6	1051·0	1030·2	8·26	2·57	7·64	0·01	0·45	Full sweet flavour.

Preservatives: Benzoates, salicylates, and naphthol were absent in each specimen examined.

These ciders, judged from their bouquet, flavour, brilliancy, good condition, and analyses, are very satisfactory ; moreover they are well and carefully bottled and attractively labelled. All are of a good gravity and obviously quite free from any impurity. Samples 2, 3, and 4 are recommended as a beverage to those who suffer from gout, rheumatism, and kindred disorders.

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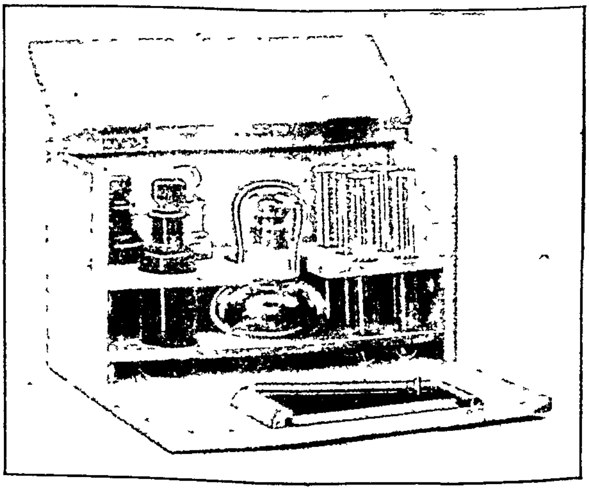

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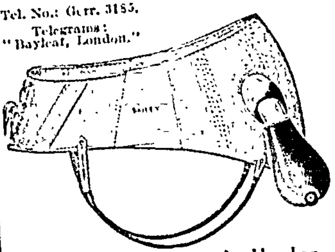

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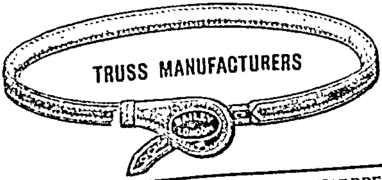

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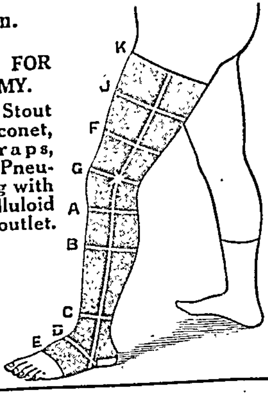

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See also pp. 15 & 21.

THE LANCET.

LONDON: SATURDAY, JUNE 13, 1925.

THE ADVANCE OF THE GENERAL PRACTITIONER.

The visit of the Inter State Post-Graduate Assembly of America to London, which concluded last week, was in effect a movement on the part of a group of Canadian and American general practitioners to equip themselves to the utmost for their work in general practice. Time after time in lectures and addresses given during the visit—as will be seen in our reports of the proceedings—reference was made to the function of the practitioner of medicine in the community. At the Guildhall banquet Dr. Charles Mayo, who presided, said, in so many words, that where the general practitioner does his duty the reputation of medicine will stand high in that community; and our American visitors themselves showed an almost amazing addiction to duty in attending during a period of peerless weather morning lectures and afternoon demonstrations of various kinds; but it was revealed amusingly at the banquet that the congressists had gone into training in preparation for the visit, for 65 medical addresses were delivered on the boat on which most of them came over. Dr. Mayo went on to speak of the great need for graduate schools of medicine, and coming from one of a team of brothers who have built up a school of teaching whose influence has irradiated widely from its centre of origin, his words carry great weight. He spoke appreciatively of the facilities offered to American delegates during the present visit, but delivered his real message in the advocacy of founding in London a graduate school of medicine which should draw students from all quarters of the English-speaking world. To his mind such a school should be run by men of distinction and achievement who, after laying down their hospital appointments, preferred to devote their advancing years to teaching others rather than to rust out in rural comfort—Dr. Mayo and his colleagues evidently all share the conviction that prolongation of mental activity also prolongs physical life.

Such a scheme has been advanced by Mr. Philip Franklin, whom Dr. Mayo described as one of the best organisers in medicine, and should it be found feasible medicine might be enabled to play a larger rôle in the life of the community. Mr. Neville Chamberlain, the Minister of Health, with no deliberate intention of supporting any particular movement, showed himself in favour of such a scheme. For he reverted constantly to the function of the general practitioner as the educator of the community in health, and first and foremost in the principles of preventive medicine; but while medicine has for long envisaged this as an ideal, the difficulties, if not insurmountable, are still to be surmounted. It is true that in the region of public health administration the application by enlightened authorities of powers already existing would do away largely with the need for new legislation, and equally true that application of the results of modern scientific discovery, if they could be applied, would at once raise the level of practice to an incredible extent. But the latent period is lengthy and is being reduced too slowly. Laboratory research takes long enough to reach the popular text-book of physiology or medicine, and still longer to get into the hands of the practitioner, who then has to assimilate the teaching, and, may be, to translate the findings into a form which can be appreciated by his public. And where hygienic knowledge is present, the will to apply that knowledge may be dormant or even completely absent. The visit of several hundred keen and thoughtful general practitioners of both sexes to this country, using the English language as the common bond with us and between themselves, will have its repercussion in stimulating the scientific practice of medicine in this country. We on this side are less able to cut free from the daily round, or to find the necessary money to make the medical tours which our American colleagues can accomplish; but certainly, as a result of this entente, more of us will find time and means to cross the Atlantic in search of wisdom on the other side. In the meantime, the great need for graduate schools at home is becoming too apparent.

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FERTILITY OF THE POPULATION OF ENGLAND AND WALES IN 1921.

The volume just issued by the Census authorities[1] tabulates the answers to two questions of the Census Schedule of 1921 which were novelties. One question required a statement in respect of each person under 15 enumerated on the schedule as to whether either of his or her parents were alive or dead. The other question invited all married men, widowers, and widows to return the total numbers and several ages of their children and step-children alive and under the age of 16 at the date of the Census, whether such children were enumerated with their parents or not. The primary object of these questions was economic—viz., to obtain data for estimates of the cost of State liabilities such as pensions, invalidity allowances, workmen's compensation, &c., but the results throw some light upon other sociological phenomena. The second of the questions mentioned is particularly interesting, and the way in which it was answered adds another to the many previous illustrations of the essentially limited scope of useful census-taking. In a large proportion of cases the question was not answered. Of 7,475,051 married men, 1,030,661 did not state the number of children. Many of the failures to answer the question really meant that the recorder had "no living children under 16," but an absolutely large number of omissions to give positive information certainly remains. The number of children under 16 obtained by answers to this question was about 8 per cent. less than the total enumerated. The actual error in defect is not, of course, so vast as this difference suggests. The question did not cover illegitimate children of unmarried persons, the children of married men abroad at the time of the Census, or orphans with both parents dead. In this way probably a difference of as much as 5 per cent. might arise, so that the actual deficit is likely to be not more than 3 per cent.

The fact remains, however, that a question, somewhat complex, judged by past Census standards, but extremely simple in comparison with those pressed by enthusiastic amateurs whenever a Census is under discussion, was not very satisfactorily answered. It is too much to expect the various enthusiasts who clamour for national stocktakings of this or that character of, as they claim, racial importance to read the reports of our Censuses; but level-headed persons before supporting any of the proposals of enthusiasts or condemning the conservatism of bureaucrats should certainly do so. The inquiry, as will have been seen, had no express relation to the subject of nuptial fertility, but there was a necessary connexion because the statistics enabled the following ratio to be calculated: Number of children under 1 year of age *divided by* total number of married men (or married women). This ratio could be computed for geographical and (for married men) occupational subdivisions. This measure is, of course, different from the ordinarily employed fraction: Number of children born in a year *divided by* average number of married men (or women) exposed to risk during the year. One cannot be converted into the other by a constant multiplier because of variations of both infant and adult mortality. But, nevertheless, the two ratios are highly correlated, and a rate of fertility deemed high (or low) by the use of one ratio would still be classed as high (or low) if the other index could have been calculated. There is also a source of error—viz., that these data include step-children, so that one may find, and does find, some infants credited to parents outside the normal range of fertile ages. In spite of these defects, the compilers are, we think, justified in holding that the tables "with liberal and intelligent treatment" provide an interesting study of the incidence of fertility among various sections of the population during the year preceding the 1921 Census. We cannot, of course, discuss the details of this tabulation, which will, no doubt, be examined in the final report. A few points may, however, be noted. The contrast between the mining districts of the country and other parts in respect of fertility is very obvious. Using the ratio of children under 1 to married men of all ages as the standard, and putting the ratio for England and Wales as 100, the figure for Durham is 134, for Northumberland 116, for Monmouth 128, for Glamorgan 121. On the other hand, the figure for Sussex is 79, for Devon and for Surrey 82, for Dorset 88. An occupational comparison brings out the same contrast. The figure for mining and quarrying occupations is 150, for agricultural occupations 90, for textile workers 83, and for professional occupations 66.

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[1] Census of England and Wales, 1921. Dependency, Orphanhood, and Fertility. London: H.M. Stationery Office. 1925. Pp. 253. £1 10s.

No tabulation of vital statistics can fail to show the consequences of the war, and the table of the orphanhood of children under 15 is a case in point. If one works out the percentages of children aged 1, 2, &c. (boys), whose mothers were dead at the Census date, the percentages are as follows: Boys, aged 1, 0·64 per cent.; aged 2, 1·25 per cent.; aged 3, 1·69 per cent.; aged 4, 1·97 per cent.; aged 5, 2·24 per cent.; aged 6, 2·58 per cent.; aged 7, 2·95 per cent.; aged 8, 3·24 per cent.; aged 9, 3·66 per cent.; and aged 10, 3·92 per cent. Plotted on a chart these percentages increase smoothly, a straight line joining the first and last runs near all of them. The percentages of fatherless boys are different. They are 1·62, 3·55, 4·66, 5·88, 6·89. 8·06, 8·56, 8·77, 9·17, and 9·64. If these are plotted and the first and last joined, the points lie on a bent bow of which the line is the string. The points diverge more and more from the line to a maximum distance for the children aged 6, and then pass back towards the line. The principal factor of this difference is, of course, the destruction of life in the war. Between 3·5 per cent. and 8·6 per cent. of all children born during the war are fatherless, and from 1·25 per cent. to 3 per cent. are motherless.

GASTRIC CANCER AND GASTRIC ULCER.

Conflicting evidence renders it very difficult to decide what part, if any, a simple gastric ulcer takes in the genesis of carcinoma of the stomach. The subject came up for some consideration during the American post-graduate visit to London. Mr. James Sherren, in a short address reproduced on p. 1266, stated that he had never seen carcinoma develop after gastro-jejunostomy for a small mobile ulcer on the lesser curvature, although it was none the less true that in at least a quarter of cancerous stomachs evidence of preceding simple ulcer could be found. Dr. Charles Mayo, at the Surgical Section of the Royal Society of Medicine, also remarked on the rarity of cancerous degeneration in small ulcers. The question is of much more than academic interest. It is of very great practical importance to the operating surgeon. Should he hold the belief that gastric ulcer is a material factor favouring the development of malignant disease, he must, logically, incline to excision in all cases where it is technically possible, for the alternative treatment of gastro-jejunostomy is not claimed to be invariably successful in promoting cicatrisation even by its staunchest advocates. An interesting contribution to the subject has recently been published by Prof. J. H. Dible.[1] He gives the results of an inquiry instituted by the Manchester Pathological Society. The material used was chiefly specimens removed at operations in the Manchester and Salford Hospitals. Of those 126 cases in which the clinical and naked-eye appearances pointed to simple ulcer, the histological evidence confirmed the diagnosis without a single exception. He points out, what other pathologists have drawn attention to, that near the edge of an ulcer down-growths of epithelium can be found which are not evidence of malignant disease though they are apt to be interpreted as such. They were found in 32 per cent. of the series under discussion and seem to be the result of the distortion of the tissues which takes place in the process of healing. In 23 cases diagnosed clinically as carcinoma and excised, and in which the lesions were at a sufficiently early stage to afford results capable of interpretation, in 19 no evidence was found in any way suggestive of pre-existing ulceration, and in 9 the weight of evidence was against any causal associations of chronic ulcer with carcinoma. There were five cases in which, on histological grounds alone, the appearances might be taken to mean that malignant disease had been grafted upon a chronic ulcer. The author also points out that the site where cancer is most frequently seen, that is, in the vicinity of the pylorus, is not the most common site for chronic ulcer, which, in 73 per cent. of cases, is the lesser curvature. His conclusion is that transformation of a chronic gastric ulcer into a carcinoma is a possible but rare occurrence.

In contrast with that view is the recently expressed opinion of H. Finsterer.[2] In 175 resected callous ulcers of the stomach, 27 per cent. showed malignant degeneration, contrary to the experience of the Manchester surgeons. He says that it may be impossible to tell clinically, by X rays, or on the operating table, whether an ulcer is malignant or not. In

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[1] Brit. Jour. Surg., 1925, xii., 666.

[2] Wien. Klin. Woch., 1925, xxxviii., 295 and 321.

145 gastric resections there were 31 carcinomas, where all the available evidence, until a histological examination had been made, pointed to the lesion being a simple one. The case-histories of five recent cases are given, and in two of these a Haudek's diverticulum on the lesser curvature was demonstrated early in the disease. It would seem that it is very easy to overlook the degenerating area of a chronic ulcer unless a searching microscopic examination is made. The end-results when such ulcers are excised, under the mistaken belief that they are simple, are disappointing. Local recurrence is not common, but in the majority of cases death occurs from metastases in the liver or retro-peritoneal glands. FINSTERER says that it is easier to recognise beginning malignant degeneration in a simple ulcer by a change in the clinical symptoms, than to be certain of it on the operation table. From his extended experience he strongly adheres to the view that wide resection in simple gastric ulcer is to be regarded as a procedure prophylactic against future malignant disease. There is thus at the present time a frank divergence of view between surgeons of distinction on the best method of saving the patient's health and life in this common malady. It is essentially a matter which only a further collection of pathological evidence will decide.

MODERN TECHNIQUE.

IN the manifold duties asked of the family doctor effective treatment of any and every ailment takes the first place. That is all that is asked, for the most part, by those who have no conception of the size of the demand. The careful elucidation of the nature of the disease, necessarily of paramount importance in the medical schools, is less appreciated in practice than the palliation of symptoms, though every logical method for healing must be based upon an accurate nosology. Those in practice often require help most urgently in situations where recent developments of medicine or surgery have led to practical therapeutics whose virtues are open to proof. When in January, 1923, a series of articles entitled "Modern Technique in Treatment" were initiated in THE LANCET, the welcome given to them by our readers was cordial to a point which we had hardly dared to expect. Their reissue as books was not contemplated, but many practitioners throughout the country have urged that the series could usefully be reprinted in handy volumes, and accordingly the contributions to the series which had appeared during the first year and a half of publication have been collected together and issued in book form on June 10th. The 76 chapters in the first volume cover a wide range of subjects. Some deal with well-defined diseases and suggest a specific curative agent; others treating of symptoms common to many conditions—such as toothache, constipation, or hæmorrhage from various sources—recommend the palliative treatment which is called for pending the investigation of the underlying condition.

The demand for this first volume encourages us to continue to devote space in THE LANCET to these articles, and publication of them in collected form will be made from time to time. It is our hope thus to set out in a handy manner a balanced and representative statement of the treatment at present advised, and, especially, to stimulate workers both in academic and applied branches of therapeutics to examine and record any promising methods for trial under controlled conditions.

Annotations.

"Ne quid nimis."

ACCIDENTAL STRYCHNINE POISONING.

AT a recent inquest on a child, aged 11, who died from the effects of strychnine poisoning, it was stated that the nurse accidentally gave 4 drachms of the medicine instead of four drops—that is, roughly, 60 times the quantity prescribed. In this country, fortunately, accidental deaths from strychnine poisoning are very few. The Registrar-General's return for 1921 and 1923 gives the number as five and three respectively for all ages, whilst the total deaths from strychnine poisoning and for all ages are 20 for each of the two years quoted. In the majority of cases the source of the strychnine is not stated, so that it is impossible to say how far medicines and how far vermin-killers are responsible. It is, of course, possible that the total numbers may be slightly in excess of these figures, as it is likely that some cases are not recognised; but in any case it may be safely assumed that the total is not much above 25 per year. Further, in the two years quoted 15 cases in each year were due to suicide. Additional restrictive legislation has from time to time been advocated, but from these figures it seems hardly necessary. In America, however, a very different state of affairs exists, for out of 70 deaths from accidental poisoning during 1924 among children between 1 and 4 years of age, insured in the Industrial Department of the Metropolitan Life Insurance Company of New York, strychnine compounds accounted for 24. In the majority of cases cathartic pills left within the reach of the child were the occasion of poisoning. In other cases tonics (presumably prescribed for adults) were taken with fatal results by the child. The fatal cases were scattered over the whole of the United States and Canada, and the *Statistical Bulletin* of the company comments that evidently the danger of strychnine compounds is not generally appreciated. Such highly poisonous drugs, the *Bulletin* suggests, should be procurable only on a physician's prescription. Roughly speaking, the population of England and Wales is about one-third of that of Canada and America combined, but even when allowance is made for the relative populations the difference is striking. It would be interesting to learn the ratio between the deaths of insured and of uninsured children, for the insurance factor may be the important one. Should the relatives of the child benefit financially at its death, the explanation of a certain amount of laxity may be found in countries where no legislative restriction has been imposed.

THE SPECIAL VULNERABILITY OF THE MACULAR FIBRES.

THE special vulnerability of the macular fibres and "sparing of the macula" is the subject of a suggestive paper contributed by H. M. Traquair to the *British Journal of Ophthalmology* for February, 1925. Though certain forms of disease of the central visual elements appear to support the hypothesis of special vulnerability, the author says that "when we examine the evidence closely it becomes clear that while the central elements as a whole are easily affected it is by no means always those whose physiological function is most highly elaborated which suffer soonest or most severely." Thus the scotoma of toxic amblyopia begins, as a rule, as a paracentral rather than as a central defect, and in recovery from retrobulbar neuritis a rapid access of central vision may occur while there is still a ring scotoma. With regard to the vexed question of "sparing the macula" in hemianopic affections, he claims that only in wounds in which actual destruction by trauma of the macular cortical centre or its fibres can take place is division of the fixation area at all common. In certain vascular lesions, however, the macular area may be divided, and in the case of tumours which gradually compress the radiations the fixation area may be spared at first and divided later. The functional superiority of the macular neurones suggests that a greater degree of interference may be required to put them out of action, whether it is caused by vascular disease or by pressure on the radiation by a tumour.

The subject is one concerning which it would be unwise to dogmatise, and it is complicated by the fact that there are still differences of opinion about the projection of the retina on to the cortex of the brain. Dr. B. Brouwer, of Amsterdam, in a recent lecture, arranged by the University of London, related experiments on certain monkeys, demonstrating that the projection of the macular fibres in the geniculate body occupies a large portion of that structure. If a corresponding diffusion of macular fibres is found to take place in the occipital cortex it will be a factor which must be taken into account.

FIFTY YEARS' PUBLIC HEALTH WORK IN ARGENTINE.

IT is not often that a medical man is invited by a learned society to recount the story of his life, but one who has organised and maintained a public health service in a country for over 50 years has justly something to his credit of which he may be proud to talk, and in April last Dr. Emile R. Coni presented a report of his activities before the Academy of Medicine in Paris. Dr. Coni was of French ancestry, and he tells how, during his student days in the hospitals at Buenos Aires, he was appalled at the conditions then existing. Suppuration abounded, the wards were in a dreadful state of dirt and disorder, tuberculous patients were relegated to damp cellars, where they died, "devoured by flies and by consumption." While still a fifth-year student he was elected as an honorary member of the only medical society then existing in Argentine and he became editor of the *Revue Médicale*, the only medical journal in the country, and in this publication he conducted an active campaign against the terrible conditions in the hospitals. When qualified he continued by means of journalistic work—for the pen was ever Dr. Coni's ready weapon—to press for some measure of reform in hygienic conditions in general, and after about 20 years of private practice he decided to devote himself body and soul to public health work. In 1880 he was able to begin to put into practice some of the measures which he had urged through the medium of the *Revue Médicale*, and he claims to have proposed the establishment of a ministry of health before this centralisation of public health activities was envisaged in Europe. In 1896 and 1897 Dr. Coni was appointed to carry out a sanitary survey of two of the Argentine provinces, Mendoza and Corrientes, and despite enormous difficulties he succeeded after many years in bringing about some centralisation of control with the establishment of efficient water-supplies, drainage systems, and complete public health services. Almost every branch of social medicine in Argentine appears to owe its foundation to the energies of this remarkable man. His first important publication, which appeared in 1879, was on infantile mortality in Buenos Aires, and in 1885 a thesis on the same subject brought him a valuable prize from the Faculty of Medicine of that city and the silver medal of the Academy of Medicine of Paris. He founded child welfare work, organised a system of school medicine, and eventually succeeded in obtaining instruction in infant welfare for girls in nearly every educational establishment in the country. The state of maternity work in Buenos Aires when Dr. Coni first turned his attention to it was appalling to the last degree, but at the present day, thanks to his untiring efforts, the town can boast six municipal and two national maternity homes. Campaigns in Argentine against tuberculosis, alcohol, venereal disease, leprosy, and even tobacco have all received much of their initial stimulus from Dr. Coni. His titles and distinctions would occupy a page; as a statistician he has set the study of disease in his country on a scientific basis; his publications, both in French and in the language of his adopted country, would fill many volumes; he has taken an active part in the municipal work of Buenos Aires, and he is acknowledged throughout Latin America as a brilliant pioneer in the field of public health. At last, broken in health and almost poverty-stricken, Dr. Coni was granted a pension by the Argentine Government, and he returned once again to France to give an account of his manifold activities before the Academy of which he had been a member for over 25 years.

AN OUTBREAK OF FOOD POISONING AT PLYMOUTH.

Dr. A. T. Nankivell, medical officer of health, Plymouth, has recently reported to the Plymouth Guardians upon an extensive outbreak of food poisoning which occurred amongst the inmates and patients at the workhouse and infirmary on April 30th. Out of a total of 730 persons no less than 308 were attacked, while, in addition, there were cases which did not report sick. The symptoms were those of gastro-enteritis of varying severity. There were no deaths, and all the patients were practically well within 24 hours of the onset of symptoms. The incubation period is not given definitely, but as the peccant meal was the midday dinner, and the symptoms came on during the same evening, it was obviously only a few hours. Owing to the fact that nine women engaged as charwomen, who resided outside the institution, were all attacked in their own homes, and their only meal in the institution was the midday dinner, it is possible to incriminate this meal with certainty. This meal consisted of beef, potatoes cooked under the beef, mince, gravy, cabbage, bread pudding, sago pudding, and milk. The beef itself was not the cause, since the rest of it was traced, while those portions not cooked by the kitchen staff of the main workhouse and eaten by 64 of the staff caused no illness. Dr. E. Wordley, the Plymouth borough pathologist, examined samples of all the food bacteriologically and found no food poisoning bacilli. He also failed to find these organisms in the fresh fæces of 12 patients or in the vomit of another patient. Blood from sufferers ten days after the attack were all negative.

The clinical and bacteriological findings suggest that the outbreak was not due to a living bacillary infection, and Dr. Nankivell considers that it was due to a heat-resisting toxin of one of the Salmonella groups of organisms. To explain its origin in the food the procedure in the workhouse kitchen was carefully investigated. Food left over from one day is used on the next. The unused gravy and stock is tipped from the stock-pot into enamelled iron bowls and placed in the larder. The stock-pot is then cleansed, and on the following day the stock from the enamelled bowls is placed again in the stock-pot and re-heated. Some of it is used for putting in the pans in which the beef, and the potatoes under the beef, are roasted. The stock never dies. An infection of the stock by a food-poisoning bacillus would result in the stock in the larder containing abundance of these bacilli by next day. The re-cooking of such infected stock would kill the bacilli but leave the heat-resistant toxins undestroyed. This very reasonable hypothesis is suggested as the source of the toxins. Careful attention was directed to the kitchen staff to try and ascertain the source of the food poisoning bacillus. Apart, however, from the fact that it was ascertained with probability that the chief cook became slightly ill with diarrhœa and vomiting on April 28th and 29th, and that one of the assistants was habitually most careless about his personal hygiene, nothing very definite was forthcoming on the epidemiological side. Bacteriological samples were examined by the bacteriologist to the Ministry of Health. The blood samples from all members of the kitchen staff were negative, presumably as regards agglutination, while fæces from the kitchen staff were all negative except from the chief cook. This was found to contain "bacilli culturally resembling *B. suipestifer*, but these have shown no serological affinities with the stock *B. suipestifer*." It is suggested that this officer was the source of infection of the food. While this is a possible hypothesis it is not more than a hypothesis, and there are facts which militate against it. In particular, if this cook suffered from an infection with a living Salmonella strain sufficient to cause a definite attack of gastro-enteritis it is to be anticipated that his serum would give a positive agglutination reaction with the infecting bacillus, whereas his blood reactions were negative. While the larder was kept very clean, the possibility of contamination from dirt, dust, and flies was not excluded.

The outbreak was worked out with great care by Dr. Nankivell and his assistants, and he concludes his report with recommendations that steps should be taken to exclude dust and flies from the food, that only persons of known cleanly habits should be employed in the kitchen, and that it should be an instruction to all members of the kitchen staff to wash their hands thoroughly after defæcation and to wash their hands on coming on duty into the kitchen.

FURTHER EXPERIENCE WITH RADIUM.

IN the May issue of the *Irish Journal of Medical Science* Dr. Walter C. Stevenson writes on 174 cases treated by him with radium during the year 1925 (evidently a misprint for 1924). The cases treated naturally divide themselves into two classes, the malignant and the innocent. The technique employed in the former is to bury steel needles, and in many cases to reinforce this by the application of radium to the external surface. Dr. Stevenson is a believer in the theory that better results are obtained by placing the radium at some distance from the skin, and to obtain this end he places an empty match-box between the skin and the applicator. His ideal procedure in a case of carcinoma of the breast is to irradiate the diseased area four days before amputation and, immediately after the removal of the breast and axillary contents, to insert tubes of screened radium into the wound, thus giving a further dose to any malignant cells that have escaped both the first irradiation and the surgeon's scalpel. Apart from malignant tumours Dr. Stevenson has treated with radium such various conditions as fractures, "injuries to elbows," lumbago, toothache, colitis, acute sciatica, and tonsillitis, stating, rather surprisingly, that "to my mind it is quite rational to use radium in acute pneumonia, in the acute stage." Radium is so steadily gaining ground in the treatment of many forms of cancer and in not a few forms of non-malignant diseases that unsubstantiated claims are the more to be regretted. In the same issue of the journal Mr. Maurice R. J. Hayes gives a short but complete *résumé* of the modern treatment of rodent ulcers by radium; he has come to the conclusion, after a long experience of treating these conditions both by surgery and X rays, that radium is the ideal weapon to employ. His experience of carcinoma of the lip is confined to recurrent growths following operation. Those cases which were treated early, before the disease had implicated the glands, did well, but those in which the glands were already infected were not much benefited. Full details are given of a number of advanced cases of inoperable carcinoma of the uterus and cervix. All these were rapidly improved by "needling," but the difficulty he has found is in dealing satisfactorily with the glands. If a method could be devised to destroy the malignant cells in the pelvic and abdominal glands or to prevent their infection, a very great advance would have been made in the treatment of this condition. In none of Mr. Hayes's cases did a rectal or vesical fistula develop—a fact which goes to show once again that in nine cases out of ten the formation of a fistula is to be blamed, not on the radium, but on the method in which it is employed, if not on the natural progress of the disease. Mr. Hayes comes to the conclusion that the best results in carcinoma of the uterus are reached by a combination of radium and X rays; radium for those parts which are accessible, while the deeper-placed disease, such as abdominal and pelvic glands, is best treated by X rays. Further reports on his interesting scientific work will be welcome.

VOLUNTARY BOARDERS AT DARTFORD MENTAL HOSPITAL.

THE report of the visiting committee to the City of London Mental Hospital at Stone, near Dartford, for the year 1924, which has just reached us, confirms the announcement already made in these columns[1] that this institution now has the statutory right to receive voluntary boarders. The Act conferring this right has also permitted the all-important change in name from "asylum" to "mental hospital." The time is indeed more than ripe for the extension of these privileges to other public institutions in the country. Since the passing of the Bill in July last five voluntary boarders have been in residence at Stone, and their number will no doubt increase steadily. We learn, further, from the report that the principle of allowing patients out on parole has been used with much success in a large number of cases, and the way to discharge has been paved in a few instances by granting short leaves of absence, up to four nights. A valuable feature in the works department at Stone during the year has been the provision of further open verandahs, attached to the wards, whereby suitable patients can be nursed entirely in the open air. An operating theatre, pathological laboratory, and X ray room are being added. An increasing number of rate-aided patients are being fitted out with clothing, made in the hospital workrooms, which is similar to that of the private patients. The resignation of the medical superintendent, Dr. R. H. Steen, after a long period of ill-health, is a cause of much regret to all who are acquainted with the valuable services he has rendered to this important institution. His successor, Dr. William Robinson, lately superintendent of Brentwood Mental Hospital, will have a valuable opportunity for contributing to the study and treatment of mental disease under modern conditions.

SIR WILLIAM BARRETT.

Sir William Barrett, whose recent death, at the age of 81, has already been reported, was one of a distinguished group of scientific men whose observation was transferred as they grew older from incidental to transcendental phenomena. Assistant to Tyndall, his early discoveries concerned sensitive flames and certain curious properties of iron alloys, while a 37 years' long occupancy of the Chair of Physics at the Royal College of Science in Dublin gave him abundant opportunity for popularising the growth of physical science. Attracted along with Russel Wallace and Crookes to the exploration of obscure human faculties, he satisfied himself of the existence of a faculty of communion or communication between individuals independent of the recognised organs of sense. Sir Oliver Lodge, who writes his memoir in *Nature* (June 6th), notes that Barrett considered that he might hereafter be regarded as perhaps the chief discoverer of this faculty. His paper read to the British Association at Glasgow in 1876 on what was later called "telepathy" did not appear in the printed proceedings, but a letter of his in *Nature* five years later paved the way for the foundation of the Society for Psychical Research. Barrett's other inquiries included the sensitiveness of certain people to magnetic fields, and the faculty possessed by some for finding water or other things by means of an unconscious physical reaction. He was the recipient of a vast correspondence from all parts of the world, recording extraordinary happenings, a selection of which appeared in the Proceedings of the Society, which had a branch of its own in Dublin. Barrett's friends could not always keep up with one whose eagerness to follow clues made companionship stimulating to the point of unrest, but fully recognised the transparent honesty and simplicity of his character and his readiness to undertake any labour to get phenomena properly observed and recorded. He was, as Sir Oliver Lodge reminds us, never deterred by ridicule or opprobrium from following such clues as he could find. Death did not seem to Barrett to be an interrupter of mental continuity, and he did not fear it.

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[1] THE LANCET, 1924, ii., 709.

THE HYGIENE OF A TORNADO.

AT 2.28 P.M. on March 18th last a tornado travelling at the rate of 60 miles an hour along a path about a mile wide struck the town of Gorham in Illinois, and crossed five counties, remaining in contact with the ground the whole time. The population of the devastated territory numbered about 200,000, being largely rural with one or two towns of up to 10,000 or 12,000 inhabitants. Among this population the local public health service was mostly in a primitive state, and the *Illinois Health News* for May gives an account of steps taken by the State Health Department to deal with the problem. The towns of Murphysboro' and West Frankfort had public water-supplies, but in most parts of the area drinking-water was obtained from private wells and cisterns, many of the former liable to surface pollution. There was no local control over milk-supplies in the area before the tornado and the only pasteurisation plant was at West Frankfort. At Murphysboro' and West Frankfort there were public sewerage systems; otherwise privies were the rule. None of the communities had a system for the collection of refuse. Many hundreds of horses and cows and domestic animals were killed by the tornado. Many people were rendered homeless. The first news of the disaster reached Springfield at 8 P.M. on the same day, and a special train left with a rescue party on board, arriving at Murphysboro' at 2 A.M. the following morning. By the morning of the 20th the five sanitary engineers of the State Department were in the area, and within 36 hours a complete health department was functioning with headquarters at Carbondale. Medical and nursing relief to the injured was provided, the dangers of communicable diseases were met by isolation and immunisation, and sanitary measures were adopted. All the work was done in close coöperation with the military authorities, who were charged by Governor Small with the responsibilities of relief and re-habitation. The medical and nursing relief work was turned over to the Red Cross organisation on the second Sunday after the disaster. Temporary emergency work was followed by organisation on a permanent basis to handle problems which are sure to continue for a year or more. A diagnostic laboratory was established at Carbondale, while the sanitary work was extended to include control of the water-supply, the milk-supplies, and the disposal of refuse. There has always been an excessive prevalence of typhoid fever and malaria in this area, and the prevention of both these diseases received attention. During the first two weeks about 1000 persons were immunised against typhoid, and probably about 20,000 will have been inoculated before the campaign ends. In the wake of the storm there arose conditions extremely favourable to the development of epidemics, especially typhoid fever. The injured were liable to tetanus and gas gangrene. A month after the disaster no epidemics of any kind had appeared in the affected area. Only five or six deaths resulted from tetanus and gangrene among the thousands who were injured. The activity of the State Health Department in the tornado zone and the success of their operations has created a demand for a permanent local health organisation. Wells and water-supplies which were temporarily disorganised were subjected to extra chlorination; tent camps were established for the homeless; arrangements were made for the removal of refuse; carcasses of dead animals were burned and buried.

One result of the disaster will certainly be an improvement in public hygiene. In our crowded country, with a local sanitary authority in every district, it is difficult to realise the great responsibility thrown upon State departments administering huge sparsely inhabited districts in which there is practically no local health organisation. The State Department of Public Health in Illinois is to be congratulated on the promptitude exhibited in dealing with the effects of the tornado.

THE MEDICAL WHO'S WHO.

THE seventh edition of this work of reference, dated 1925, has just reached us, regret being expressed for the delay, which is attributed largely to the entire resetting and alteration in size from former editions. The last appearance of the volume was in 1918, when, owing to the death of its then editor, it fell into abeyance. In this volume such consultants and specialists as have returned the forms supplied to them have taken the opportunity of stating precisely the nature of their work, and general practitioners have indicated in many cases the professional studies in which they are particularly interested. At the end is an alphabetical index of towns with the names of practitioners there resident. The volume contains, besides, certain personal data which are otherwise not accessible. The list of questions to practitioners, on the answers to which the book is based, was submitted to the General Medical Council, which took no objection to them. The volume contains no name which does not appear in the Medical Register. It is well printed and produced in handy form for the reference shelf. The price is 30s., from the Grafton Publishing Company, Ltd., 8, Stone Buildings, Lincoln's Inn, London, W.C. 2.

PEMPHIGUS NEONATORUM.

Two recent outbreaks of pemphigus neonatorum in maternity homes have induced the Ministry of Health to issue a Memorandum[1] on the subject. In the first outbreak 23 babies were more or less severely infected, the disease appearing first round the finger-nails and spreading thence to other parts of the body. Three mothers suffered from mammary disease, and there were two cases of puerperal fever, one of which proved fatal. In the second outbreak the number of cases was much smaller; all were slight in degree, and there was no infection among the mothers. There were no fatal cases in either outbreak and in neither could the source of the infection be ascertained. The Memorandum distinguishes between a mild type of pemphigus associated with little or no systemic disturbance and recovering within a few weeks, and a grave type which usually terminates in pulmonary œdema, the latter being the result of infection from an unhealed umbilical wound. No definite pronouncement is made as to the true causal organism, although most authorities consider pemphigus to be an infantile form or variant of contagious impetigo. In the mild type the portal of entry is presumed to be some slight lesion of the skin, the carrier being the mother, nurse, or midwife, either directly or through infected clothing, to which the infective agent seems to adhere with great tenacity. In the majority of outbreaks the attending midwife is the suspect; in one instance a small pustule was found on the midwife's finger, but examination has often failed to reveal any infective lesion. The first requirement in prevention is early diagnosis, and the Memorandum regrets the lateness in some cases of the report made to the local supervising authority. The midwife or nurse suspected of being the agent of spread should be suspended from practice until rendered free from infection and required to report after resuming practice. The disinfectant measures at present employed may reasonably cover a wide range since the mode or modes in which the disease may be spread are imperfectly known.

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[1] Memo. 103 Med. H.M. Stationery Office. 1d.

INTRAPULMONARY INJECTIONS FOR INTRACTABLE HÆMOPTYSIS.

Copious hæmoptysis is so serious a symptom and so alarming to the patient that any effective addition to the means of treating it is welcome. We publish a short clinical note from Dr. Andrew J. Morland, describing a case in which the direct injection through the chest wall of coagulen (Ciba) into a cavity was followed by the arrest of the bleeding with dramatic suddenness. There are on the market several compounds of this kind prepared from the serum of different animals. There is some evidence that they are useful in cases of hæmorrhage from the lungs, stomach, or bowels when given by subcutaneous or intravenous injection. Coagulen is said to be rich in thrombokinase, and its action is therefore readily comprehensible. The method would seem to be worthy of further trial in cases where copious and repeated hæmoptysis occurs. It is, of course, not always easy to determine in a given case with extensive disease the exact situation from which the bleeding arises, but in Dr. Morland's case it was known that there was a large cavity, and bubbling râles were plainly audible over it while the hæmorrhage was in progress. Experience with intratracheal injections has shown that the lung tissue will tolerate substances like menthol, guaiacol, and olive oil, reaching it through the air-passages. Modified serums of the type employed by Dr. Morland are usually bland substances, and it is therefore not surprising that they can be injected directly into a cavity within the lung. It is a recognised principle in surgery that where possible the bleeding point should be dealt with directly. Dr. Morland's attempt to apply the same principle to bleeding from the lungs is rational, and it is gratifying that in his case such good results were achieved. His experience would seem to warrant further trial of this method in suitable cases.

IMPERIAL ENTOMOLOGICAL CONFERENCE.

The second Imperial Entomological Conference is being held in London from June 9th to 18th at the instance of the Imperial Bureau of Entomology, and summoned by the Secretary of State for the Colonies. This meeting is the outcome of the first conference held in 1920, when it was decided to hold such meetings every five years to further and coördinate the work of tropical and subtropical entomological research throughout the Empire. Particular interest should attach to this conference as it follows so closely on the international conference held in London last month[1] under the auspices of the League of Nations, for the purpose of setting up an international commission to study sleeping sickness in tropical Africa. The present chairman of the Imperial Bureau of Entomology is Lord Buxton, and the director is Mr. G. A. K. Marshall, D.Sc., F.R.S., assisted by Mr. S. A. Neave, D.Sc. The subjects which are being discussed at the Royal Society's rooms in Burlington House during the sitting of the conference deal with the widest aspects of entomology, and Prof. Warrington Yorke on Monday, June 15th, will consider the medical aspect in a paper on Coördination of Effort in Tsetse-fly Investigation.

Mr. S. P. Vivian, whose name appeared in the Birthday Honours List with a C.B., was intimately associated with drawing up the medical benefits regulations under the National Health Insurance Acts, and, since his appointment as Registrar-General, has been freely accessible to suggestions for increasing the usefulness of his department to those engaged in health administration.

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[1] The Lancet, May 30th, p. 1155.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CXXVI.—THE TREATMENT OF HAMMER-TOE.

Part I.—General Considerations: Conservative Measures.

Prophylaxis.

The prophylactic treatment of hammer-toe deformity necessitates the use of shoes and stockings of sufficient length in the actively growing age, and correct posture in standing and walking. Shoes should be broad in the toe portion, straight along the inner borders, and not too pointed. The tendency to deformity should be detected early and rectified by the use of metatarsal bars or anterior arch supports, and by such active and passive movements as encourage the flexion power and range of the toes.

While the term *hammer-toe* is often loosely applied to any flexion deformity of the toes that may be found associated with various malformations of the foot, it should be more correctly reserved to describe a fixed flexion deformity. Of this there are two types, the *acquired* and the *congenital*, and in both the condition is commonly bilateral.

The *acquired* form is the more common; it involves the second toe, and is associated with hallux valgus, the combined deformity resulting from too short and too pointed footwear in the growing age, and from the improper method of walking with feet everted. The second phalanx is flexed on the first, and the latter is slightly over-extended at the metatarso-phalangeal joint. The terminal phalanx is in line with the second, or flexed or extended on it. The approximation of the tips of the great and middle toes buries the two terminal phalanges of the second toe, forcing them into a vertical position, while the proximal phalanx remains horizontal. The vertical portion of the toe is pinched at the top and bottom by the shoe; a painful corn forms on the head of the proximal phalanx and another on the tip of the terminal phalanx, just at the end of the nail, which becomes thickened and distorted. The tip of the toe is swollen, broadened, and flattened. On the dorsum of the metatarso-phalangeal joint the extensor tendons become contracted, maintaining the hyperextension deformity at this joint. A similar contracture occurs in the capsule and flexor tendons on the plantar aspect of the acutely flexed proximal interphalangeal joint, which after a time prevents straightening of the toe at this joint by passive movements. Occasionally the flexion deformity is in the terminal and not the proximal joint.

The *congenital* form differs from the acquired in that the middle toe is always involved, alone or together with the fourth and fifth. The proximal, and particularly the terminal, joints are both flexed to some degree; and the terminal phalanx is rotated and twisted,—underlying its mesial neighbour. In infancy the toes can be straightened by passive movements, and are therefore amenable to conservative treatment. A slight adduction of the little toe alone, and with no disability, is so common that it cannot be considered abnormal.

In its less strict application "hammer-toe" may denote flexion deformity of the toes, associated with exaggeration of the long arch (*pes cavus*). All the five toes are involved, and usually bilaterally. These should be described as "clawed" rather than "hammer" toes. Hyperextension contracture of the metatarso-phalangeal joints is more marked than in real hammer-toe. Both the terminal joints are flexed, but the toes are drawn towards the dorsum of the foot, with no pressure effects on the tips, and the terminal flexion is more easily corrected by passive stretchings than in real hammer-t

In some cases of hallux valgus all the smaller toes are flexed in the two terminal joints and pushed backwards into adduction and dorsiflexion by pressure of pointed and short footwear, resembling "clawed" toes, but with the addition of the adduction. The great toe is valgus, and not "hammer" shape, thus distinguishing this boot-produced deformity from real pes cavus and claw toes, where the great toe is also hammer-shaped and less valgus. In rheumatoid arthritis the toes may be similarly deformed.

In any "hammer" and "claw" condition involving several toes, the anterior transverse arch is depressed and painful callosities form on the balls of the central toes. The corresponding metatarso-phalangeal joints may exhibit mechanical synovitis, due to weight stress being unrelieved by the deformed toes, which are unable to assume the normal flexion effort in the "push-off" in the last part of the step in walking. Toes that will not flex and grip the ground in the "push-off" are functionally useless.

The indications for treatment of real hammer-toe are: (1) The relief of pain from pressure on the dorsum of the prominent proximal interphalangeal joint or on the tip of the toe at the nail. (2) To fulfil the requirements necessary for admission into some of the public services. (3) For cosmetic reasons in children. There are two general procedures. (1) Conservative: By daily manipulations to correct the deformity passively, with retentive splints to hold the toes straight by day and night. (2) Operative: The gradual method is so tedious and lengthy that in anything but the slightest degree of deformity, even in the case of children, I strongly advocate early resort to operation.

Conservative Measures.

Conservative treatment is indicated in early cases of acquired deformity, and in children when the parents prefer it. For the single deformed toe of the acquired condition the best splint is a short covered metal one, of the width of the toe, and extending from the tip to the ball of the toe, where the splint is expanded into a small plate. This is fitted with a padded elastic loop passing over and exercising pressure upon the prominent proximal joint, and by tapes or elastic to fix the rear end to the mid-foot. It can be worn without discomfort within the shoe by day, and also at night. Various modifications of this splint are on the market and can be obtained from any foot appliance shop. Palliative appliances can also be obtained, consisting of an elastic sheath for the toe, with a sponge rubber pad attached, protecting the dorsal or terminal corns from pressure. These appliances take the place of the old strapping method, which was tedious. Splints are of service only in cases that can be corrected passively.

In the flexed and adducted third and lesser toes of the congenital deformity the use of a corrective splint is more difficult, on account of the twisting distortion and the smallness of the toes. The appliance used is a separate leather insole within the shoe, fitted with elastic loops for the toes. It is known as a "half-sole plate with loops," the half sole being fixed to the forefoot by a broad elastic band or tapes over the instep; it can also be used at night.

When appliances are used passive stretchings should be done morning and evening, to flex the toes at the metatarso-phalangeal joints, and extend them at the proximal and distal interphalangeal. While there is no doubt that in the slighter and earlier degree of deformity conservative treatment, if carried out with patience and assiduity, is successful, yet it is so slow and so expensive in time, splints, boots, exercises, &c., that operative treatment is mostly to be advised.

W. H. TRETHOWAN, F.R.C.S. Eng.,
Orthopædic Surgeon to Guy's Hospital.

(*To be concluded.*)

DARLINGTON MEMORIAL HOSPITAL.—Darlington's war memorial is to take the form of a new hospital. The cost will be £190,000, and there will be 225 beds and accommodation for 48 nurses. The Ministry of Health and Darlington Town Council will provide the maternity and skin diseases departments.

Special Articles.

ROYAL INSTITUTE OF PUBLIC HEALTH.

ANNUAL CONGRESS AT BRIGHTON.

MAY 27TH–JUNE 1ST, 1925.

THIS Congress was attended by some 300 delegates and members from all parts of the country, while New Zealand, France, Belgium, Switzerland, Portugal, and America sent representatives. Lord Leconfield acted as President of the Congress. In his address he referred to the interest Sir Henry Harben had taken in the Institute. As a not inconsiderable landowner whose tenants go in for milk a great deal he had been interested in seeing the report of a clean milk competition, but after reading it was profoundly grateful that his doctor had prohibited him from taking milk in any form. Papers were read on May 28th and 29th, both in the mornings and afternoons; receptions followed by dancing were given by the Mayors of Brighton and Hove at the Royal Pavilion, Brighton, and at the Hove Town Hall. On May 30th a visit was paid to Worthing, where the delegates were entertained to lunch by the Mayor of Worthing and to the home of Lord Leconfield at Petworth.

Much of the success of the Congress was due to the excellent arrangements made by the medical officers of health of Brighton, Hove, and Worthing.

SECTION OF STATE MEDICINE AND MUNICIPAL HYGIENE.

Sir Arthur Newsholme, in his presidential address, indicated some of the long overdue reforms in our administrative machinery called for by the advancing complexity of our problems. No abstract could do justice to the well-thought-out argument, the logic of which was invincible.

Dr. C. W. Hutt (M.O.H., Holborn) opened the discussion on

Immunisation against Diphtheria.

The aim of everyone who took up the work, he said, must be to get all the children living in the area immunised as soon after they reached the age of 6 months as possible. Preliminary Schick testing was found to be advisable at the Holborn Council's maternity and child welfare centre; retesting after the routine injections of the toxin-antitoxin, although unpopular with parents, was very necessary. Of 202 that had been retested 20 were found to be Schick positive after three inoculations; neither age nor sex nor interval after immunisation seemed to have any influence on the phenomena. His experience was that the reaction after the toxin-antitoxin was in most cases negligible.

Dr. W. T. Benson (Asst. M.O.H., Edinburgh) stated that three-quarters of the cases of diphtheria occurred after the child was of school age, but only 40 per cent. of the deaths. He described the routine carried out in connexion with the immunisation of the children in the Edinburgh schools. The consent of the parents to the treatment varied from 11–86 per cent., according to the social status of the parents and the attitude taken by the school staff. He found the presence of parents at the examination was a disadvantage; it upset the child and upset the routine. Although parents were invited to bring children of pre-school age to the school for immunisation, very few availed themselves of the invitation. The children were re-tested from six to nine months after immunisation.

Dr. S. Monckton Copeman (late Ministry of Health) dealt with the difficulties of diphtheria immunisation; although the procedure was not difficult to learn some initial practice was necessary; the statistics were unreliable if the difficulties were not appreciated. He referred to the need of the injection being intradermal, and was in favour of the first injection even in school-children being 1/10th c.cm. of toxin-antitoxin. This injection could be given when reading the preliminary Schick test; if advisable the child could be given 1 c.cm. of toxin-antitoxin at the time of reading; in this way very little time would be lost and the chances of reaction minimised. He found that in the Farnham Poor-law schools, where the children came from rural areas, there was very little immunity present among the children, and they were correspondingly hard to immunise. He thought that no nurse or ward-maid should be asked to work in diphtheria wards unless she had been found to be Schick negative or had been immunised.

Dr. Duncan Forbes (M.O.H., Brighton) thought that the work should start first with the children in residential institutions in a town. All nurses in fever hospitals, all children suffering from scarlet fever, and all tuberculous children admitted to isolation hospitals should be immunised.

Dr. S. G. Moore (M.O.H., Huddersfield) gave an example where excessive instances of diphtheria had occurred among non-immunised children as opposed to the immunised children in the same school.

The same subject was dealt with in another Section by Dr. H. Stott (M.O.H., East Sussex Combined Districts), who had gone to the trouble of collecting several instances where immunisation had been carried out on nurses in fever hospitals.

Tuberculosis and Employment.

The discussion was opened by Dr. P. C. Varrier-Jones, who had been driven to the conclusion that in tuberculosis the unit to be dealt with is the family. Papworth was a sanatorium with 120 beds; in addition some 70–80 houses had been built for families of tuberculous men where they could live with their families and earn a wage to supplement their war pensions. The disability of the men varied from 20 to 100 per cent. In the outside world consumptives were refused work partly owing to the fear of infection, but more because employers feared that the consumptive would not be able to earn his wage. At Papworth they were producing three times the quantity they were three years ago. The unskilled man could be dealt with; he was quite content to work as a machine-minder doing repetition work. Tuberculous women could be fitted in with men in the colony. The foreman and managers should be consumptives; they took a more sympathetic view of the ailments and state of health of the workers; again, consumptives are very suspicious of healthy overseers.

Dr. Neville Cox (T.O., Brighton) stated that schemes to provide work for the tuberculous male population as a whole had been found to be too costly. He referred to the report of the Barlow Committee. The success of Papworth was due to the benevolent autocracy of Dr. Varrier-Jones. One advantage of Papworth was that the only qualification required was that the patient had tuberculosis; his sputum need not be free from tubercle bacilli. But for various reasons only a small proportion of the patients would go to Papworth; for the bulk work must be found in the ordinary industrial world. Apparently there was very little work a consumptive could not do, but there was real danger, however, in any tuberculous person looking after babies or children and in their close association with young adults, and a risk in their handling food. From statistics published in the Brighton annual report for 1923 it would appear that work in connexion with transport, such as tram and bus conductors, and taxi-cab drivers and railway work had the largest proportion of patients at work. Of 39 clerical workers 29 were at work. The critical time for a patient was the first two years after leaving sanatorium. Many of these were then fit for few hours work; these men ought to be employed in municipal workshops. An experiment is being made in Brighton where four men are engaged in wood-work, machinery being used; any work done is used for corporation purposes.

Mr. G. W. Allen (manager of the Factory in the Field, Leeds, situated in its healthiest suburb) gave an account of the work being carried on. The men lived in the city; the working day was spent in the healthy environment provided by the factory. Most, if not all, of the men he dealt with were ex-Service men with pensions varying from 8*s.* to 40*s.* per week. Over three years ago a society of these tuberculous men was formed: it was registered in order to limit the liability of the men. They started with £3000, apparently clubbed together from the tool grants provided by the Ministry of Pensions, and £3000 loaned by Lord Haig from the British Legion Funds. The key to the position was the use of machinery to avoid strain. They started with two army huts provided with the best electrical machinery for the particular work first taken up, the splitting and binding of firewood. Boot-making and repairing had not proved satisfactory because they had not been able to purchase the best machinery for the purpose. Brush-making, a skilled occupation, was their best trade. A few of the patients had been trained as commercial travellers and were paid £3–£4 per week and expenses. General utility work had been found useful—four men under a foreman who had been a joiner were engaged in small repairs to cottage property; they did anything from mending a water spouting to laying concrete. Removal of colliery refuse heaps from the areas within the city boundary had been remunerative.

Dr. H. de C. Woodcock (late T.O., Leeds) stated that 20 per cent. of the men who were working in the Leeds factory have tubercle bacilli in their sputum, a much lesser proportion than at Papworth. Although there had been hæmorrhage and actual deaths among these working patients he held that no more deaths occurred than if they had not been at work. The psychical value of work for the tuberculous was very considerable; any hope of recovery was taken away if the men were told they were no longer fit for work.

Several speakers referred to the attitude taken by Henry J. Ford, who considered that manufacturers should not only employ selected samples but all the members of the ordinary population of the district. He had found employment for tuberculous persons and even for the blind in his works.

A kinema demonstration on the Colony Treatment of Tuberculosis was given by Dr. Varrier-Jones.

Valuable papers on ionisation in ear discharge were delivered by Dr. A. R. Friel and Dr. R. Cramb (Brighton); evidently all engaged in treating school-children should follow these pioneers. A paper on the dental treatment of school-children was read by Dr. L. A. Parry (S.M.O., Hove) and Mr. Mackay, L.D.S. (Brighton).

Obstetrics and Public Health.

The discussion was opened by Prof. Louise McIlroy, who suggested that a panel of obstetricians should be formed among general practitioners who were interested in obstetrics; they should also be in charge of the antenatal clinics; in rural areas whole-time medical officers should be appointed to do the midwifery. Obstetrics should come under the public health service. She thought that the inspection of midwives by doctors was objected to by the persons inspected; this should be done by midwives of long experience such as the matrons of maternity institutions. Ordinary general practitioners were not suitable persons to serve on the staff of antenatal clinics; much experience was necessary, also study in the continental capitals such as Paris, Berlin, and Vienna; not enough material was available in London. It was not enough to have been a house surgeon for a year at an obstetrical hospital. She objected to notification of puerperal fever, and pointed out the lack of institutional accommodation for tuberculous pregnant women.

Dr. Eardley Holland dealt with stillbirths. He gave an account of the procedure of the subcommittee at Geneva which was appointed to arrive at a definition of stillbirth; difficulty had occurred as to the fœtus in transient postnatal stage of its life. Usually the fœtus when born breathes at once and becomes a child; occasionally it has a postnatal existence and this causes confusion. The subcommittee had decided that breathing or a cry should be the sign of life; many births are attended by women of very little medical knowledge and these signs were easily recognisable. The placenta should always be examined as well as the fœtus if a post-mortem examination was made. The cause of death might be found to be retroplacental hæmorrhage, necrosis, or infarction. The part played by syphilis in causing stillbirth had been very much exaggerated. A syphilitic placenta could not be recognised as such by the naked eye; only one-fourth of all macerated fœtus and about one-tenth of all cases of viable fœtal death were due to syphilis. Every macerated fœtus should be examined post mortem for the existence of syphilis; enlargement of the long bones (osteochondritis) was the cardinal sign. The enlarged liver or spleen did not necessarily mean syphilis. Antenatal supervision, the strategy, was of no use without skilled attention during labour, the tactics. He thought that considerable medical skill was required to diagnose the minor degrees of pelvic contraction and to assess correctly the reproductive history of a woman. Early diagnosis of the toxæmias of pregnancy was not easy. The advocacy of an obstetric service was useless as it could not be manned. The teaching was very poor at present; we should strive for the better education of medical students and all doctors in post-graduate courses.

Dr. Moore pointed out that from 1901–24 in his borough area the death-rate among all mothers was 5·69 per 1000 births. Among those who voluntarily notified their pregnancy the death-rate was only 2·43.

Dr. G. Q. Lennane (M.O.H., Battersea) pointed out that owing to the rigid rules laid down by the Ministry of Health only 50 per cent. of the beds were occupied at the Battersea Municipal Maternity Hospital.

Dr. R. D. Smedley (M.O.H., West Sussex C.C.) considered any special accommodation available in workhouses used as a temporary measure. The local authority should pay for such accommodation and the mothers would then be admitted as private patients. He had made such arrangements for difficult cases and found it of great assistance. He thought that tuberculous mothers might be left out of the question; they should not have children; they were told so at the sanatorium, and things should not be made too easy for them. He had found that the inspection of midwives by a doctor had done a great deal to improve the practice of midwives, especially in the introduction of abdominal palpation.

Dr. H. Scurfield (late M.O.H., Sheffield) said that when antenatal clinics were started it was thought that the work would be confined to giving advice in cases of healthy women, but experience has shown that work in connexion with women whose health and physical condition was abnormal was needed. For antenatal work he thought that an experienced obstetrician was required.

Dr. D. Forbes saw no objection to the notification of puerperal fever. All that happened was that the M.O.H. obtained from the doctor a few particulars, and he was able to help the doctor by obtaining removal of the patient to hospital. He thought that the charge made by the doctor called in to render medical help was too high.

Prof. McIlroy, replying, thought that one advantage in the attendance early in pregnancy at the antenatal clinic was that arrangements could be made for the mother's confinement in good time. She thought that one of the objections of women to going into a Poor-law infirmary was that it could always be seen from the birth certificate of the child that it was born under the auspices of the Poor-law.

Control of Venereal Diseases by the Public Health Service.

The discussion was opened by Col. L. W. Harrison. He thought that the crying need at present was for better treatment of gonorrhœa. It was very wrong for a mother to bear one syphilitic child after another; propaganda in this respect should not only be left to societies—a word in season by the general practitioner would be of very great value.

Dr. F. H. Lawson (V.D. officer, Brighton) had found that it takes longer to see a patient in an ordinary out-patient department than in a special place set apart for the purpose.

Dr. Forbes stated that his experience was only a small amount of arsenobenzol was sent out locally from the Public Health Department and much of that was used by the V.D. officer in his private practice and by members of the honorary staff of the hospitals. In cases of stillbirth the midwife was paid 5s. for bringing the body to the Health Department which undertook its subsequent disposal. The liver was sent to the pathologist—in about 15 to 16 per cent. evidence of syphilis was found. The parents were informed, but very great difficulty was experienced in getting them to attend the clinic for examination and treatment if necessary, although the way was made easy for them by offering special appointments. In Brighton the V.D. officer is in close touch with the infant welfare centre, but unfortunately women will not go to the V.D. clinic to the extent that they should.

Dr. R. A. Askins (Bristol) considered that the divorce of the Public Health Department from the work of V.D. schemes constituted a real danger. Most of the V.D. work was carried out in practically watertight departments of hospitals. The M.O.H. was only an onlooker; this was all the more unfortunate, as he is usually an excellent propagandist, closely in touch with the general practitioners and the educationists of the town.

Dr. F. Bowerbank (New Zealand) mentioned that in New Zealand the number of women receiving treatment was very small; it was evident that many women were not receiving treatment. He thought that V.D. was better treated by a specialist than by a general practitioner.

Mrs. C. Neville Rolfe (British Social Hygiene Council) hoped that their Council would now be able to influence the adolescents of both sexes. In Canada and the United States to every V.D. centre was attached an almoner who dealt with the families of the patients and not with the patient alone. In this country we were doing a certain amount for girls but very little for boys. She referred to the Big Brother movement of the United States, where boys needing social adjustment were passed on by the almoner to a committee largely composed of business men interested in the Rotary movement. She hoped that as a result of the new Council's efforts they would be able to raise the standard of cleanliness and self-respect, and that in consequence the supply of professional prostitutes would be reduced.

Colonel Harrison, in replying, stated that great emphasis was laid on the importance of including general practitioners when the schemes were initiated. There is still free access to clinics, but practitioners do not attend to any extent. He agreed that very little use was made of the free supply of arsenobenzol, and felt also that the arsenobenzol that was given out was not used properly, each case evidently receiving two or three doses only. He agreed with Dr. Bowerbank that V.D. is better treated by a specialist; there was enough in syphilis alone to make a specialty in itself; a study of the treatment of gonorrhœa was brain-racking. General practitioners say they see so very little of venereal disease; they are apparently doing very little treatment, but they should certainly be trained to such a degree that they can diagnose a case of venereal disease when they see it. The Public Health Department and venereal disease scheme started divorced. The Ministry of Health are now doing their best to bring these two bodies together. Letters are frequently sent out from the Ministry suggesting that the V.D. officer should be on the staff of the M.O. or appointed as his adviser in V.D.

Surg.-Cmdr. R. T. G. Parnell's paper, read in the Military Section, dealt with carefully observed series of cases of syphilis in which bismuth was used; it should be read by all those who are engaged in dealing with syphilis. Bismuth, he considered, has largely replaced mercury; it is more effective, far less toxic, and its effects on the patient are far less unpleasant, It was specially useful for chronic glossitis and chronic leucoplakia of the mouth. Unfortunately the mercury pill had no analogous bismuth preparation.

A film on the Treatment of Gonorrhœa in the Male was shown by Colonel Harrison.

SECTION OF NAVAL, MILITARY AND AIR FORCE HYGIENE.

In this Section, presided over by Sir William Leishman, a discussion on the

Teaching of Hygiene in the Army

was opened by Lieut.-Colonel J. A. Anderson, professor of hygiene at the Royal Army Medical College. Certain officers are selected for training as specialists in hygiene at the end of the general senior course of two and a half months taken after eight to ten years' service. The course lasts six months; the officers are required to obtain a Diploma of Public Health and also a knowledge of the application of the principles of hygiene to an army community both in the barracks and in the field. Included in the course is the study of the medical aspects of recruiting to which a whole month is devoted. To assist the student of army hygiene and sanitation two official text-books are available, an elementary one, "The Manual of Sanitation in its Application to Military Life," dated 1920, the other issued to all R.A.M.C. officers, the "Manual of Military Hygiene," 1921. Colonel Anderson thought that printed or pictorial propaganda of a popular type should be more used in the army.

General Sacquepée (France) gave an account of the teaching of hygiene in the French Army. He thought that the men being taught the value of cleanliness and simple hygienic measures would have a marked effect on the health of the civil population when these short-service soldiers returned to civil life. He mentioned that the addresses to the private soldier were supplemented by "tracts" and posters often conveying a pictorial lesson, but he placed even more reliance on the film.

Surg.-Cmdr. G. R. McCowen read a paper on the M.O.H. and Chemical Warfare, which has been very fully reported in the lay press. Major-General W. H. S. Nickerson, V.C., remarked that unless medical officers of health were fully informed as to the probable number of casualties, and the kind of casualties, they obviously would not be in a position to deal with the problem.

The paper Routine Pathological Examination as Applied to Physiologically Inefficient Aviators was read by Wing Commander H. E. Whittingham, Director of Pathology for the Royal Air Force. He said that flying might strain the physiological functions of the body in various ways; the general alertness required used up much nervous energy; high altitudes accelerated the rate of breathing and the circulation producing changes in the whole metabolism. Pathology was physiology gone wrong. The flying personnel were systematically kept under physiological observation. In this country the Central Medical Board at Hampstead dealt with any conditions which could not be remedied at a station and also with all aviation candidates. If the Board decided that any case was physiologically inefficient or doubtful, specialists performed further tests to detect, if possible, the cause and to aid in the assessment of the probable duration of the disability.

SECTION OF INDUSTRIAL HYGIENE.

In this Section excellent papers on Smoke Prevention were read by Dr. C. S. Thomson (M.O.H. Deptford), and Mrs. M. H. Cloudesley Brereton and Mr. T. M. Horobin; Dr. C. O. Stallybrass (Asst. M.O.H. Liverpool) spoke on Occupational Cancer.

Miss Gertrude Smith (Bootle), speaking on the routine of welfare work in the factory, contrasted the excellent arrangements made for the work girls with those made for health visitors.

SECTION OF TROPICAL DISEASES.

This Section was presided over by Dr. Andrew Balfour. His presidential address was on the term "tropical," and he also gave to the Section a demonstration of the Rockefeller malaria film.

Sir Leonard Rogers, in the course of a paper on Disease Incidence and Climate in India, spoke of India as an ideal field for studying the influence of climate on disease. He referred to the close relationship between high rainfall and high leprosy incidence, and humid monsoon winds and high phthisis rates; and he indicated chills as the most important cause of malaria. Marked falls in the number of small-pox cases were seen when high degrees of humidity occurred during the monsoon months. In years of failure of the rains the decline was much less during the monsoon months, and consequently the rise which the succeeding cold, dry weather invariably brought, started from a higher level and an epidemic resulted. In most parts of India the principal small-pox epidemics could thus be foreseen, in future, in time to allow of special efforts to push vaccination in the affected areas.

General Gouzien, of the French Colonial medical administration, gave an interesting account of the measures adopted to combat sleeping sickness in the French colonies. The work was very thoroughly organised throughout an enormous area; villages were even moved to bring them on the lines of communication. The success attending the French system of training natives to take part in the laboratory work aroused the admiration of Sir William Leishman.

SECTION OF PATHOLOGY, BIOCHEMISTRY, AND BACTERIOLOGY.

The outstanding features of this Section were the presidential addresses and two papers dealing with vitamins. Prof. E. C. C. Baly (Liverpool) in his address dealt with the anabolism of the simpler compounds and the construction of proteins by plants. The light of the sun does more than photosynthesis; it maintains the compounds formed in a state of high energy so that plants can carry out their vital functions. The healthier a plant the higher is its food value; this depends upon the plant's high vital energy. He held that vitamins were not specific chemical compounds, but were substances normally present in food in a state of high chemical energy.

WOMEN AND THE PUBLIC HEALTH.

The opening address was delivered by Miss Margaret Hardy, J.P.; the afternoon session had as Chairman Mrs. Cooper Rawson.

In the discussion on Heliotherapy and Actinotherapy Sir Henry Gauvain stated that for heliotherapy we wanted intermittent exposure to sunlight; he questioned if sunlight by the sea were not as good as the much-vaunted Alpine sun. Dr. Leonard Hill, speaking of ultra-violet rays produced by lamps, said that so far as he could find out real and artificial sunlight produced the same effect.

On the second day the subject of birth control was discussed by Dr. Mary Scharlieb, Dr. Norman Haire, and Dr. M. M. Chadburn. The discussion has been fully reported in the lay press, as was also the sermon preached on the same subject by the Bishop of Birmingham, F.R.S.

A model popular lecture on the Plague in Britain in Past Centuries was delivered by Lieut.-Col. W. P. MacArthur to a large and representative audience on the Saturday evening, May 30th.

BERLIN.

(FROM OUR OWN CORRESPONDENT.)

Transplantation.

THE principal subject discussed by the recent German Surgical Congress concerned transplantation and its results. The discussion was introduced by a paper read by Prof. Lexer, of Freiburg. He stated that such homoplastic transplantation of entire organs—pancreas, thyroid gland, hypophysis, kidney, and suprarenal capsule—as had been tried had not had any lasting result. Bier and Carell had successfully transplanted entire extremities in dogs, but Prof. Lexer had not been so successful himself; his best case was that of a transplanted femur, but the leg became necrotic after 24 days, although the circulation had apparently been re-established. Concerning individual organs, he said that homoplastic material had often been a failure when autoplastic material was not attainable. Transplantation of epidermis and of skin should be performed more frequently as there excellent results were obtained, the former being successful on an average in 90 per cent. of cases, the latter in 75 per cent. Transplantation of bones with periosteum and bone-marrow also gave good results. The restoration of the function required rather a long time, at least one year, and three years when the naked bone without periosteum had been transplanted. It was essential not to strain the extremity too early. In bones transplantation of homoplastic material was sometimes successful, whilst heteroplastic material produced marked irritation with suppuration leading to a necrosis of the transplanted bone. Transplantation of joints might be successful under the same conditions, but homoplastic material led to healing only without giving motility to the joint. Cartilages were well suited for transplantation as they had a marked tendency to adhere to the substratum. Homoplastic material might be dispensed with, as ample material was at the disposition of the surgeon in the cartilages of the ribs and of the ear. Previous to a transplantation of a tendon, the joints concerned must first be made movable, if necessary by a plastic operation. To replace a tendon a strip of periosteum or of the fascia lata might also be taken. To avoid adhesion Prof. Lexer recommended the implantation of fat. He had performed 330 operations for mobilisation of joints in this way, and on one occasion used a lipoma from an old woman for this purpose. A drawback was, however, that hæmorrhage might occur in fatty substance. Fat was also useful in filling cavities of bones and defects of the dura mater. In six of 17 cases of defects of the dura mater filled with fat the epileptic fits had ceased. In transplantation of vessels the homoplastic method was uncertain, but autoplastic material taken from the vena saphena gave good results. It was not yet possible, he said, to give a definite judgment on transplantation of nerves, while free transplantation of muscles had always been a failure.

University of Münster.

The number of universities in Germany is still increasing. Shortly before the war new universities were opened at Hamburg and Frankfort. As a result of the war Germany has lost Strasbourg, one of its most important universities where the medical faculty has been especially flourishing, but Cologne has been opened since with its great and well-equipped hospitals. A recent addition to the centres of medical learning was the completion of the University of Münster, the capital of Westphalia, one of the oldest cities of Germany. The University of Münster had consisted for a century of a philosophical and theological faculty only, but shortly before the war a medical faculty was added which was at first rather incomplete, giving opportunity for the study of the preliminary branches of anatomy, physiology, and natural sciences only, and not for clinical medicine. Now the faculty has become complete, a series of new clinics has been built and these were lately inaugurated in the presence of many representatives of the Government, other medical faculties, and of the medical profession. The new premises, though constructed in a plain architectural style to save superfluous expenses, are, nevertheless, furnished with modern apparatus and laboratories. Forty-five students have already matriculated for clinical study. A number of "honorary citizenships" of the university were conferred at the opening ceremony on prominent medical men.

Alcoholism in Germany.

One of the few good effects of the war was the decrease of alcoholism in Germany. Spirits could not be purchased at all or only at a prohibitive price. The result was that the number of mental diseases due to alcoholism decreased greatly. The lunatic asylums of the city of Berlin, for example, became sparsely inhabited and a new asylum, which was to be opened at the end of 1914, became superfluous, so that its premises could be dedicated to other purposes. Similar examples occurred throughout Germany. According to a statistical record of the clinic for mental diseases of Breslau University, the proportion of mental diseases due to the abuse of spirits was estimated before the war at not less than 40 per cent., which decreased in war-time to 7 per cent. After the war, in 1919, 100 new spirit licences were granted, with the result that the proportion increased in that year to 15 per cent., in 1920 to 17·3 per cent., and in 1921 to 32 per cent. In 1922 there was again a decrease to 31 per cent., and in 1923 a still further fall to 22 per cent. The reason of that decrease was that the spirits became in the latter year much more expensive owing to heavy duties and that by a by-law in Breslau the sale of spirits was prohibited from 9 P.M. to 8 A.M. In other cities there is a similar state of things, as shown by reports from the clinics for mental diseases of the Universities of Munich, Cologne, and Frankfort. Undoubtedly the nuisance of alcoholism requires energetic measures, but radical prohibition as in the United States would probably never meet with the approval of legislation in this country. The adherents of "No Prohibition" are very busy and even sometimes do not refrain from violence, as shown by an incident which happened lately in Berlin. The Church Anti-Alcohol Society had convoked a meeting in Trinity Church where an address was read by a clergyman. He was frequently interrupted by a noisy mob who even tried to assault him, so that the police had to enter the church to protect him and the congregation. It must, however, be stated that the indiscriminate drinking of beer has much decreased in academical circles. The German student who formerly used to spend a good deal of his time in "Kneipen" has largely abandoned that custom and sports of every kind now widely fill the hours formerly spent in smoky and badly ventilated restaurants.

Gonorrhœal Arthritis in Infants.

Dr. Knauer, of Breslau, reports in the *Zeitschrift für Kinderheilkunde* a case of gonorrhœal arthritis in a female infant, aged 7 days, whose parents were both infected with gonorrhœa. On the seventh day after birth reddening and swelling developed on the left prepatellar bursa and three days later the great toe also became affected. On aspirating the bursa purulent fluid was evacuated containing gonococci. The swelling of the bursa and of the toe gradually diminished and the infant was completely restored to health. No fever had occurred. The portal of infection could not be determined as neither the conjunctiva nor the vulva of the infant was affected; possibly the gonococci entered through the umbilical wound or through the skin, where some small pustules were present. Two other cases were reported by Dr. Fischer. The shoulder-joint was affected in both cases. On aspiration gonococci were found in the one case, whilst in the other the culture was sterile.

Gas-masks against the "Haff Disease."

The so-called Haff disease, described some time ago in these columns,[1] which by thorough investigation was traced to poisoning by arseniuretted hydrogen, has not yet been entirely eradicated, although the waste waters from the factories, whence the disease originated, were partly diverted from the Haff. In the month of May 20 new cases occurred not only among fishermen but also among persons working near the Haff. The Government has therefore provided the fishermen with gas-masks similar to those used during the war, but some of the men have declined to wear them, on the grounds that they interfere with their work. It is to be hoped that, by and by, the more conservative fishermen will get accustomed to the mask, which does give effective protection.

First-Aid Lessons by Films.

The Red Cross has arranged for an instructive film to be shown to the public in the leading kinemas. The film was lately demonstrated privately to a selected audience, including many medical men. In the first part the aid to be given in cases of wounds was shown, where special stress was laid on the prevention of infection in wounds and where the application of the "Verbandpäckchen" (first-aid packet) was demonstrated. The second part dealt with first-aid in fractures and dislocations, showing the use of improvised splints. The evil effects which might result from attempts by the uninitiated to set a fracture or reduce a dislocation were demonstrated and the necessity of calling a surgeon was emphasised. The third part dealt with first-aid to be given to the apparently drowned, in cases of frost-bite and sunstroke, and in other accidents of that kind. The pictures were well produced and easily intelligible to a lay public.

Public Health Services.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

THE following are some of the health statistics for 1924 of a group of districts of varying local government status:—

Name of district.	Mid-year population (R.-G.).	Birth-rate.	Death-rates per 1000 of the population.				Death-rates per 1000 births.		
			All causes.	Tuberculosis.	Cancer.	Resp. diseases with influenza.	Neonatal mortality.	Infant mortality.	Maternal mort. from childbirth.
Southport C.B.	73,650	12·9	13·7	1·07	1·4	2·6	31	63	1·1
Bilston U.D. ..	30,310	26·5	12·6	0·72	0·9	4·4	39	97	0·0
Radcliffe U.D.	25,290	15·1	14·1	0·80	1·1	2·8	31	102	5·1
Barnstaple R.D.	18,520	14·2	12·3	0·75	1·6	1·8	—*	42	3·8
Adwick-le-Street U.D.	14,750	33·4	8·6	0·74	0·5	1·6	—*	71	6·1
Bentley-with Arksey U.D.	14,430	24·6	8·6	0·41	0·3	2·3	—*	93	3·4

C.B. = County borough. U.D. = Urban district.
R.D. = Rural district. —* = *Information not given in the report.*

Southport.

Dr. G. O. Barnes reports that the hours of sunshine in Southport during 1924 were 1410·1, and that nearly the whole of the large shortage of sunshine occurred during the summer half-year of April to September. The population of Southport is almost entirely residential, with the necessary auxiliary occupations. There is one important motor works. The notification of tuberculosis is still unsatisfactory, and the health committee have resolved that cases of failure to notify shall be taken before the magistrates, in accordance with the regulations of 1925. The arrangements for the treatment of surgical tuberculosis leave much to be desired, but Dr. Barnes points out the wide distinction between pulmonary and surgical tuberculosis from the point of view of the sanitary authority, in that the latter, while causing grave personal disability and loss, is generally regarded as non-infective. He suggests, therefore, that surgical tuberculosis should in principle be dealt with by voluntary institutions. One out of ten samples of milk produced inside the borough was found to be tuberculous, and seven out of 84 outside samples. The four samples of "certified milk" submitted to bacteriological examination proved to be well above the standard. The council of Southport have protested four times against the continued suspension of the Tuberculosis Order of 1911. 309 new houses have been completed by private enterprise during the year. The high cost of labour and materials, however, interferes both with the construction of new and the repair of old houses. New houses are still needed for manual workers and other persons with small means. Southport is in an exceptional position, seeing that the deaths exceeded the births by about 30. Presumably the new houses partly provide for new residents.

Bilston.

Dr. T. Ridley Bailey reports that the year under review has been one of marked progress. A scheme for the substitution of 910 water-closets for privies has been successfully carried out. New storm-water and detritus tanks have been provided at the sewage disposal works. The sewering of the Moxley area has been completed, and every house in that district provided with water-carriage. "The chief blot is, of course, the state of overcrowding." Nevertheless, Dr. Bailey congratulates the council on their efforts. Since 1919 the council have erected 619 houses, and at the present time they have under consideration a scheme for the erection of 492 houses, and another scheme under private enterprise for 70 more. At the 1911 Census the number of persons per house was 1·96. At the 1921 Census the number was 4·25, and it is estimated that to-day the number of persons per house is 5. Recent efforts have, therefore, not provided for the annual increase in the population. "Some of the conditions found by the inspector during his visit were appalling." No proceedings can be taken for overcrowding. The only solution of the problem is the erection of more dwellings, and, says Dr. Bailey, "any man or any body of men, under whatever pretext, preventing or delaying this work is an enemy to the State." The health visitor's report shows that of 728 babies 662 were breast-fed, 28 partly breast-fed, 3 received breast milk and solid food, and 35 were artificially fed at the time of the first visit; also that 235 of the babies had a "dummy" and only 64 were provided with a separate cot. The report under review is the fortieth which Dr. Bailey has made during his term of service.

Radcliffe.

Dr. John M. Gibson comments on the increase in infant mortality from 74 in 1923 to 102 in 1924, and states that most of the Lancashire districts also show a marked increase. Infant mortality has always been very high in Radcliffe, as shown in a table giving the mortality for every fifth year. The figures are 222 for 1895, 198 for 1900, 155 for 1905, 148 for 1910, 145 for 1915, 115 for 1920, and 102 for 1924. As in most districts, there has been no decline among the deaths during the first week and month of life. The opening of a maternity home in the district is urgently needed, especially in these times of overcrowding. Dr. Gibson points out that the Bealey Memorial Convalescent Hospital (eight beds) is in danger of being closed owing to lack of funds, and he suggests that this building is admirably adapted for use as a maternity home.

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[1] THE LANCET, 1925, i., 566.

An outbreak of encephalitis lethargica has caused considerable anxiety. One case of this disease was notified in 1920, and none in the three subsequent years. During 1924 11 cases were notified, none of which ended fatally. One of the survivors has left the district, and her subsequent history is unknown. Of the remainder, only four have made complete recoveries. Three manage to perform their ordinary duties, and three are physically unfit for any work 12 months after the attack. The 11 cases seemed to have no relationship to one another, and in no instance was there a second case in the household. During the last quarter of the year there was an outbreak of measles, numbering about 700 cases, with seven deaths, all under the age of 5. Dr. Gibson suggests that it would be advantageous if measles in children under 5 years of age were made notifiable. For many years the opening of a maternity and child welfare centre has been under discussion. When the report was issued this event was expected to take place on April 2nd, 1925. The building is an excellent one for the purpose, having large bright rooms and being surrounded by a public park. Since October, 1921, a scheme has been in force for the conversion of privies into water-closets. The number of privies, which was 1863 in 1921, has been reduced to 880 in 1924.

During the year particular attention has been given to the purity of the milk sold in the district. In commenting on "purity" tests Dr. Gibson points out the unsatisfactory nature of the "deposit" test, as every cow-keeper was able to forestall this test by providing a fine sieve to strain out the dirt. The bacterial count gives much more satisfactory results. No milk purveyors in the district have applied for licences to sell "graded" milk, but a fairly successful effort has been made to get the "Grade A" standard of purity made general. Of 29 samples of milk examined 27 reached the Grade A standard for bacterial count, and 13 for the absence of *Bacillus coli*. Only four samples were examined for the presence of tubercle, and one of these was found to be infected. In addition to the local supply of bread, a considerable amount is received from neighbouring towns, and a large proportion is wrapped in waxed paper. There are nine slaughter-houses in the district, eight registered and one licensed, and the new meat regulations, with the provision for three hours' notice of the intention to slaughter, will facilitate inspection "enormously." Dr. Gibson refers to the important conference on smoke abatement for the area round Manchester held during the year, and attended by representatives from 78 authorities.

A valuable series of hints to boiler attendants compiled by Inspector Clinch, of Halifax, have been circulated to all the factory owners in the district. As regards housing, Dr. Gibson reports that 96 houses have been added during the year, that 38 more are in course of erection, and that plans have been prepared for a further 50, and that when these have been completed the urgent demand for houses will have been met.

Barnstaple.

Dr. J. R. Harper reports one case of encephalitis lethargica at Combe Martin which recovered, and a fatal case in the North Devon Infirmary admitted from Wrafton, outside the district. During the early part of the year there was a widespread outbreak of influenza, more severe in type than that of the three previous years. Nine deaths resulted. The abnormal rains of 1921 severely taxed the drains and sewers of the district, and many complaints of flooding were received from Braunton. Most of the water-supplies in the villages are excellent. Combe Martin has now in hand a scheme for an adequate public supply.

Adwick-le-Street.

Dr. A. B. Dunne points out a discrepancy with regard to the deaths from childbirth coming to his knowledge and the figures supplied by the Registrar-General, the numbers being five and three respectively, equivalent on these small numbers to the high death-rate of 10 or 6 per 1000 births. Twenty-one cases of small-pox were notified with no deaths.

Bentley-with-Arksey.

Dr. Dunne also reports for this district, in which there were no cases of small-pox notified. In both districts the use of vans as permanent dwellings is becoming very common, and hitherto, unless a nuisance could be proved, the sanitary authority has had no power if the vans were on wheels. This has now been altered by the judgment delivered by the Lord Chief Justice in the case of Keeling *v.* Wirral R.D.C., by which such vans are temporary buildings and subject to the by-laws of the sanitary authority in districts where Section 27 of the Public Health Acts (Amendment) Act, 1907, is in force. Dr. Dunne returns to the question of the smoke nuisance, and trusts that the public will take sufficient interest in the matter to ensure the passing of the proposed Smoke Abatement Act.

SCHOOL MEDICAL SERVICE.

Statistics from three school medical reports for 1924 are given in the following table :—

Name of district.	No. on roll.	Av. elem. school attendance.	No. of routine children examined.	Special examinations or inspections.	Percentage of children found on routine examination requiring treatment.‡
Torquay	3000*	—†	1113	4234	15·5
Eastbourne ..	4883	4478	1573	8467	18·6
Leamington Spa	3347	3018	1046	1348	8·8

* Approximately. † Not given.
‡ Excluding uncleanliness and dental defects.

Torquay.

The school medical officer, Dr. T. Dunlop, on introducing the assistant S.M.O.'s (Dr. J. V. A. Simpson) report, remarks on the importance of his special investigations. Dr. Simpson carries out the treatment at the welfare centre and so is able to follow up the health of many children from birth to school-leaving age, and instances several cases of incipient defects—e.g., tonsils, squint—satisfactorily treated in pre-school children, ensuring that such children may start school-life without handicap. Dr. D. Wilson, the ophthalmic surgeon, congratulates the district on the close coöperation between the welfare centre, the school medical service, and the parents as is shown by the increasing numbers of young infants brought to him for treatment.

In his account of the open-air school, Dr. Simpson's enthusiasm is justified by the results obtained. The many advantages are clearly outlined in the advance in health and morale of the debilitated child and in the financial gain to the community from turning out healthy youngsters in place of confirmed invalids. Torquay is fortunate in the possession of open-air accommodation for 3 per cent. of its whole school population. Dr. Simpson, in his special investigation at the open-air school, reasons out the difficulties of precise definition of "nutrition" for obtaining standards for comparison, and wide references are made to various authorities. He finally adopts the Baldwin-Wood method and counts as malnourished all below 7 per cent. of the standard weight for age, sex, and height; on applying this to the records of 148 children extending over a period of four and a half years, he finds that one out of every two children were below the limit on admission as against one out of every five on leaving. He further shows that the children remaining malnourished increase, on the average, more in height than do the others.

From his results it might be inferred that the consistently malnourished child has a constitutional bias which remains true to type in spite of a favourable environment and is in a class quite distinct from the malnourishment resulting from illness, bad feeding and housing. He disarms criticism by himself pointing out the paucity of data, and using an American standard for English children. The ventilation of the schools has also engaged Dr. Simpson's attention. He has employed Leonard Hill's katathermometer freely and tabulated the results of his experiments. The charts given show strikingly high readings of both dry and wet katas in the open-air sheds which contrast strongly with the low readings in some of the schools. The findings generally were in conformity with the sensory impressions obtained. A chart showing the incidence of catarrhal conditions at the time when these readings were taken would have been of interest.

Eastbourne.

Eastbourne has a relatively small number of children in elementary schools, but the percentage of attendance is fairly high—nearly 92 per cent. The percentage of defects is close to the average for the whole country. It is noted that visual defects are the only conditions which have not been proportionately reduced, and an apparent increase of such defects has been found in other parts of the country. The only condition likely to be affected is myopia, and even here, says Dr. J. Kerr in his recent standard work on "School Vision," "it is quite impossible to say how much school contributes quantitatively to the aggravation of the condition of myopia, possibly 50 or 60 per cent. would be a full estimate, but these eyes are not originally made myopic by school"—i.e., school conditions are not the primary cause. Those familiar with the conditions in the schools of to-day will not readily believe that such conditions are responsible.

The physique of the children seems to be distinctly good. Dr. W. G. Willoughby points out that they are above the standard heights at all ages and above the standard weights at all ages except in the 12-year old group. The Eastbourne children are generally taller and heavier than they were in 1908, the difference in height often amounting to 1¼ inches or more and in weight to 3 lb. or more. It is suggested that the improvement "cannot be dissociated from the child welfare work, since it is particularly marked in the younger children." The attendance of parents at routine inspections was poor, 48·4 per cent., and there are other indications that they are not fully coöperating—e.g., there were 301 cases who failed to attend the dental clinic this year; out of these, it is true, 108 promised to obtain private treatment, but experience shows that the value of such a promise is not always good.

The arrangements for treatment are fairly extensive, and there are nine different clinics, including an unofficial and voluntary orthopaedic clinic which we hope will become permanent. There is a special mental deficiency school and an open-air school, where much attention is given to the more serious cases of malnutrition.

Leamington Spa.

Dr. W. L. M. Goldie's report, for the most part, consists of a series of statistical tables. There are several points of interest which could have been elaborated to the benefit both of the medical practitioner and the layman. Leamington would seem to be fortunate in its small incidence of infectious disease, and no school closures were necessary on account of infectious outbreaks. The percentage of vaccinated children in the elementary schools has considerably diminished; 65 per cent. of these children are unvaccinated. It is interesting to note that as the children attain the leaving age there is a progressive increase in the number of vaccinations. In the secondary schools there is a much higher percentage of children vaccinated; only 32 per cent. of boys and 33 per cent. of girls are unvaccinated. The number of defects found at routine examinations is surprisingly small.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED MAY 30TH, 1925.

Notifications.—The following cases of infectious disease were notified during the week, namely:—Small-pox, 88; scarlet fever, 1572; diphtheria, 807; enteric fever, 60; pneumonia, 1007; puerperal fever, 52; cerebro-spinal fever, 13; acute poliomyelitis, 1; encephalitis lethargica, 71; dysentery, 2; ophthalmia neonatorum, 118. There were no cases of cholera, plague, or typhus fever notified during the week. The number of small-pox cases showed a decrease of 18 from the number for the preceding week.

Deaths.—In the aggregate of great towns, including London, there were 2 deaths from enteric fever, 76 from measles, 14 from scarlet fever, 71 from whooping-cough, 27 from diphtheria, and 18 from influenza. In London itself the deaths from influenza numbered 0, from whooping-cough 10, and from diphtheria 8.

The Services.

ROYAL ARMY MEDICAL CORPS.

Capt. M. Ferguson to be temp. Capt., and relinquishes the rank of Capt.

Lt. H. I. Clapperton, late Ind. Army, to be temp. Lt. whilst employed as a Dental Surg.

W. G. Bradbeer to be temp. Lt. whilst empld. as a Dental Surg.

MILITIA.

Capts. to be Majs.: F. G. Foster, W. E. Elliot, W. W. Wagstaffe, C. Atkinson, H. K. Ward, and H. W. Maltby.

TERRITORIAL ARMY.

Maj. D. Dougal to be Lt.-Col. and to command the 12th (2nd Western) General Hospital, vice Lt.-Col. J. H. Ray, vacated on completion of tenure.

ROYAL AIR FORCE.

R. F. G. Dickson is granted a short service commission as Flying Officer for three years on the active list.

Flight Lt. J. A. Quin is transferred to the Reserve, Class D2.

INDIAN MEDICAL SERVICE.

Lt.-Col. H. Boulton to be Col.

Capt. Jyotish Chandra De to be Maj.

Lt. W. H. Critien to be Capt.

The King has approved the relinquishment of his temporary commission by Lt. Ragunath Balkerishna Chandrachud.

Col. A. A. Gibbs, I.M.S., has been appt. Hon. Physician to the King, Ind. Mil. Forces, vice Maj.-Gen. J. Jackson, I.M.S. (ret.).

Col. E. L. Perry, I.M.S., has been appt. Hon. Surgeon to the King, Ind. Mil. Forces, vice Col. F. Wall, I.M.S. (ret.).

OVERSEAS NURSES' MEMORIAL.—As a memorial to the nurses of the Overseas Nursing Service who died in the war, a nurses' home is to be built in connexion with the Elizabeth Garrett Anderson Hospital. In aid of the appeal fund Lady Burnham recently opened a replica of a modern operation theatre at the British Empire Exhibition. The Memorial Fund Committee includes the High Commissioners for Newfoundland, Canada, Australia, and New Zealand. The Overseas Nurses' Memorial Exhibit will be found in the Palace of Housing and Transport at Bay 16, Avenue 6, in the British Empire Exhibition, Wembley. Souvenir bricks can be purchased for 1s. each. Donations may be addressed to Lady Dufferin and Ava at the hospital, 144, Euston-road, London, N.W. 1.

LONDON HOSPITAL.—Mr. Bernhard Barron has given £10,000 for the erection of a new pathological department. The present department is entirely inadequate—five or six men are doing difficult research work in one room. A gift of a similar amount has been made by Mr. and Mrs. Williams for the establishment of an Owen Williams Research Fund, named after their son, who died in 1911. The contract, amounting to nearly £10,000, for the erection of the new hostel for resident doctors has now been let, and the consultative children's department is to be enlarged and improved, a new member being appointed to the honorary staff as a specialist in children's diseases. When this has been done it will be a consultative centre for all the children's welfare departments in the East End. There are still 101 closed beds in the hospital.

cancer will ever be amenable to surgery." Before the war, German teaching had perhaps a too preponderating influence on the other side of the Atlantic. Now laryngo-fissure undoubtedly owed its present position to the work of British surgeons ever since the early days of Durham, Butlin, and Semon.

A clinical description, with lantern illustrations, was then given of the manifestations of both intrinsic and extrinsic cancer. With regard to the latter it was pointed out that it is not always necessary to remove the entire larynx simply because there was a growth somewhere at its upper orifice or its outer surface. In fact, extrinsic cancer of the epiglottis, the aryepiglottic folds, and the post-cricoid region can sometimes be more successfully dealt with through a lateral pharyngotomy (as shown by Wilfred Trotter) than by the mutilating operation of complete laryngectomy. Cancer in the neighbourhood of the sinus pyriformis is seldom operable.

Complete laryngectomy is much more successful nowadays both as regards operative mortality and ultimate results for the good reason that it has been almost entirely abandoned for extrinsic cancer. It is now employed simply in those cases of intrinsic cancer which are too extensive to be dealt with by laryngo-fissure. But it will become increasingly less frequent as we progress in recognising epithelioma of a vocal cord more promptly and removing it by splitting the larynx. This recognition depends on teaching the public and the profession that any hoarseness, persisting for more than three weeks, should demand expert investigation. Further details in the methods of diagnosis were then given and illustrated.

The technique of laryngo-fissure was illustrated on the screen and temperature charts and specimens were shown. Four patients on whom laryngo-fissure had been performed eight, seven, six, and five years ago were then exhibited. Three of them belong to the working class; they are all able to earn their living and all had a good, rough, strong voice. Figures were also submitted showing a permanent absence of disease in 80 per cent. of cases. The results were indicated in another way by the statement that of 55 cases operated on before 1922 for intrinsic cancer of the larynx no less than 40 of them were alive and free from recurrence three years or more after the operation. Out of 66 cases only 10 had died from local recurrence. The rest had succumbed from other causes.

FUNCTIONAL NERVOUS DISTURBANCES IN CHILDREN.

By H. CHARLES CAMERON, M.D., F.R.C.P.

NOT without appreciating the boldness of the proceeding I am going to ask you, a gathering of scientific men, for a moment to turn your back upon the laboratory and the operating theatre and to come with me into the nursery life of some ordinary household, there to study the origin of certain common abnormalities of conduct in the child—to inspect, as it were, the very growing point of all neuropathy in the forcing house of the nursery. It is a study no doubt remote from the particular medical interests of many of you. Yet if we are not all particularly concerned as physicians with the study of childhood, as parents at least not a few of us have a very direct interest. For indeed the nursery is a place where we all meet upon common ground, parent, pedagogue, priest, pædiatrist, psychologist, and if the part played by the physician, as pædiatrist or as psychologist, is of supreme importance it is because he alone has knowledge of the full development in adult life of psychopathic disturbances and because he alone is able to appreciate the earliest deflections from the normal and to isolate from the tangle of forces acting upon the child that which is especially responsible for some particular disturbance. For such a task the wider outlook of the physician is very necessary. There is, indeed, a close resemblance between the abnormal conduct of the unstable child and the abnormal conduct of the insane, between the symptoms resulting from the functional weakness of the immature brain and symptoms directly due to degeneration or disease. In ascent and in descent, in development as in deterioration, the same country is traversed and we catch glimpses of the same scenery.

Thus it is clear that if we are to learn anything of the functional nervous disturbances of children we must pursue our investigations in the home. As with the insane, the conduct of the restless nervous child is at its worst in the intimate surroundings of the home. Let the offender be removed to an institution, an asylum in the one case, a hospital or a school in the other, and how great and immediate is the improvement! In the hospital, indeed, we may learn much of the physical processes of disease, of the child itself very little.

Maternal Traction.

In our visit to the home the first and most important object which we shall there encounter is no less a person than the mother, a being possessing the most amazing power over every action and every thought of her child. It is hardly possible to exaggerate the immensity of this power of maternal traction exercised consciously or unconsciously all day long. No doubt children differ very much one from the other in what we ascribe to inheritance, in temperament, in disposition, in ability. Yet that which is inherited is in the main a variation in the susceptibility in the degree of reaction to the influences of environment. With some children gross faults of management upon our part produce but little disturbance, with others the slightest mistake provokes its own reaction in the conduct of the child. The dependence of the conduct of the child upon its mother is doubtless at its greatest when the mother is an ardent mother, concentrating upon her single child or small family all her interests and all her thoughts. The contact becomes so close that it comes about that whatsoever the mother says of her child, thinks of him, above all, fears for him, that he tends to become. The child is quick to get ideas as to what is characteristic of himself and personal to himself. Yet he has no power of self-analysis. He judges of himself, for the most part, by what he sees in his mother's eye. The difficulty is greatest, I think, for the mother of an only child. All other interests are apt to go by the board and she settles down to an agitated contemplation of the wreckage wrought in the child by her own too great apprehension.

For in whatever way we may define maternal competence it is something very closely associated with maternal self-confidence. The response of the dominating egotistical child to conscientious yet timid and uncertain handling, I have described in a word borrowed from the literature of the alienist, *negativism*. We all know the negativistic child. To urge him to proceed downstairs determines a rush to the top of the house; dressing, equally with undressing, is resented with tears and struggles. If his mother carry him he desires to walk, if he is set to walk he desires to be carried. Negativism of this sort grows only in response to a certain type of management. It does not appear in the children of parents who are strong-minded and confident of themselves, who demand and expect obedience, who never contemplate the possibility of refusal or resistance. Nor, I think, does it appear in the children of those delightful mothers who never appear to bother even when the children habitually fall downstairs or climb with their muddiest boots over the drawing-room furniture. Negativism is the response of the child to a fault to which we are all prone as parents, the repeated and persistent attempts to secure control and the repeated and persistent failure to achieve it. Whenever traction upon the child is too obvious and too constant, yet in insufficient force, the child is forced into a posture of opposition, forced to make strain and to pull in the opposite direction.

The Force of Negativism.

Let us examine the part played by this force of negativism in the production of some of the common disorders of conduct in children. As among the insane, a persistent refusal of food, a veritable anorexia nervosa, is one of the commonest difficulties encountered in the management of the nervous child. It is instructive to note that among the poor, where food is apt to be short, the disorder is something of a rarity. The mother cuts off the hunk of bread. "That's all you're to have," says she; "I want some more," says the child; "You can't have it," says the mother. Among the very poor the opposite fault—shall we call it bulimia?—is the rule. When food is haggled over and doled out, the restless child is apt to develop an apparently insatiable hunger and to clamour all day for its satisfaction. I had in my ward last month a bright clever little girl of 6 from a cottage in the country. She was sent to me with the suggestion that her great polydipsia and polyuria were evidence of diabetes insipidus. Her life, indeed, was one long hunt for fluid. The mother told us that she had purloined and drunk two bottles of her father's stout, as well as two bottles of medicine which she found in the house. The precautions taken to ensure that she had no access to fluid were prodigious. In the ward, with a cup of water at her bedside, polyuria and polydipsia both disappeared within a few days. I understand that among a few of the least balanced adult minds in the United States prohibition has produced a reaction not very different from that encountered in this little child.

But in the nurseries of the well-to-do the common fault is over-persuasion. The child is urged, entreated, implored to take food. Sometimes, and it always makes matters worse, force is used and a strong-minded woman with uplifted spoon endeavours unsuccessfully to administer the prescribed amounts. Often the only articles of food for which the child shows any liking are those which the mother does her best to withhold from the conviction that they are unsuitable pabulum for a young child, cheese, pickles, and the like. It is always the very foods which the mother most eagerly desires the child to take that are most persistently refused. Sometimes when the struggle is at an end and the cloth removed, the child will astonish everyone by demanding food, or he may descend from his chair—in which he has refused to taste a morsel of the proffered meal—to scavenge greedily for crumbs upon the floor. Two mothers told me on the same day that they really thought that the best meal that their child made in the day was when with a parcel of broken bread they proceeded to an expedition to feed the ducks in the park. One mother had even taken to including in the parcel some nutritious pieces of brown bread and butter in the sure hope of their consumption by the child.

Successful Treatment by Judicious Neglect.

With anorexia nervosa of this sort, one treatment alone is successful. The mother must hide from the child her insistent desire that he should eat. The suggestion with which the food is proffered must be altered. The emphasis may be laid upon the fear that excess may be taken. Helpings must be ostentatiously halved. Only after a proper show of surprise and reluctance is the second half conceded. One day a boy was brought to me from the North of England. Always a poor eater, for some weeks I was assured that he had taken nothing but a few biscuits. The negativistic element was easily discernible in this child and when I explained my point to the parents, the father eagerly corroborated it. The boy, he said, was sick in trains, as many such children are. He was told, therefore, that he must not come into the restaurant car. He at once said that he felt very hungry. By insistence he got his own way, but for fear of the dreaded train-sickness his mother gave him the smallest of helpings, conceding the second helping with the greatest reluctance. As a result of the alteration in the parental attitude he then and there ate such a meal as he had not taken for years.

In the difficult question of nursery constipation, too, it is possible to discern the large part played by the negativism of the child. No doubt it is right and wise that the child's bowels should be open daily. The best way to help a child to such a desirable achievement is to take great and obvious pleasure in his regularity to convey to him the conception of himself as a small person of whom it is characteristic that his bowels are always open without fail. The direct appeal, the insistence, the agitation openly displayed when failure results—not open yesterday and to-morrow will be the third day—produces in young children a distaste and a spirit of opposition to the whole proceeding. The attempt to get the child to go to stool may produce a display of negativistic resistance comparable to that shown at meal-times or at bed-time. Such children have even been brought to me with the suggestion that there exists an anal fissure or some other cause for pain upon defæcation.

The diagnosis of this common pseudo-constipation may be supported by other observations. The subject of it is likely in his daily life to show many other instances of his tendency to negativism. Laxative drugs, in general successful enough, are here quite without effect. Only when a dosage sufficient to produce diarrhœa and perhaps actual incontinence, is the opposition and resistance overcome. It may be clear that the constipation varies in severity according to the person who is in charge of the child. A new management, for example, determined to overcome it, always produces an exacerbation. A visit to the seaside, with diversion of thought and concentration upon new employment and new surroundings, often brings temporary relief. Constipation of this sort is always said to produce fretfulness and bad conduct. Whether that is a likely result of true constipation I do not know, but it is clear that fretfulness and nervous unrest manifest themselves in an increase of negativism.

Stereotyped Movements.

In a second group of cases, of very different nature and origin, the disturbance is also perpetuated by the determined efforts of the parents to prevent it and the consequent opposition of the child. In infancy all children are prone to perform certain stereotyped movements, provocative of certain sensations which by much repetition have become pleasureable and soothing. Thumb-sucking, head-banging, thigh-rubbing or infantile masturbation are good examples of the class of movement to which I refer. As the level of the intellectual processes rises, as memory and imagination awaken, as the child lies in bed occupied in the recollection of yesterday's happenings and the anticipation of to-morrow's, these habits and these joys should be forgotten. It is very obvious that they are often kept in being by the concentration of the mother's mind upon them and by her persistent efforts to stop them. They cease only when they are forgotten. The attempts to forbid and prevent serve only to keep them in the fore-front of consciousness. The mothers of all children in whom thumb suction persists for an unduly long time have in common that they are immeasurably distressed by the habit and determined to stop it. A little girl of 4 was brought to me for inveterate thumb-sucking, which had survived much smearing of the offending digit with foul-tasting herbs, the use of a protective metal cage, rewards, punishments, and entreaties. I suggested that the mother should insist upon routine thumb suction being practised by the offender three times a day for ten minutes, on the principle that if a child's chief delight, shall we say the spinning of his top, is ordered regularly as a routine with sufficient peremptoriness, its attraction will promptly cease. In this case the thumb suction ceased within ten days.

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In thigh-rubbing or infantile masturbation, which, because of its implication of the sex organs causes even greater distress to the parents, the ill-effects of elaborate efforts to foil and restrain, are even more apparent. The worst case of masturbation that I know of was cured by the accident that he developed an acute appendicular abscess. For six weeks he was very ill with general peritonitis. All thoughts of the inveterate habit were absent from his mind and from the minds of those in contact with him as he fought for his life. All attention, his own and other people's, was concentrated on the daily dressing. If in infantile masturbation preventive apparatus must be used, and there are a few cases in which it is difficult to avoid its use, I think that no expenditure of trouble is too great to prevent the child appreciating the purpose for which the restraint is employed. The child may think that it is worn to make the legs or the back straight, but let its real purpose be hidden. Otherwise the use of the apparatus rivets the attention upon the habit so that its ultimate removal carries with it almost the certainty of relapse. Of masturbation in older children, I am not, of course, at the moment speaking.

These few examples I take to illustrate my contention that in the nursery and in nursery management there is a wide field for the practice of an elementary form of psychotherapy. It is clear that it is through the mother and by means of her alone that we can control the disturbance in the child. We need not offend her by any appearance of fault-finding. Disturbances such as we are considering do not commonly occur in the child of a woman who is not an ardent mother. It is easy to show her that in a hundred and one ways she has done nothing but good to her child. In this one point, inhibited by the urgency of her fears and anxieties, she has perhaps failed. If her understanding is convinced and her cooperation secured all will be well. She is possessed of powers over her child incomparably greater than another can exercise. She has proved that by the profundity of the disturbance provoked in the child. It is a question only how this great power can be utilised for good and not for ill.

Among other short introductory lectures on Wednesday, June 3rd, and Thursday, the 4th, there should be mentioned an address by Mr. T. P. DUNHILL on Auricular Fibrillation in Exophthalmic Goitre; one upon the Heart in Influenza by Dr. STRICKLAND GOODALL, who spoke of his conviction that the ætiology of heart disease in this country was changing the almost universal attribution to rheumatism disappearing; and one by Dr. GORDON HOLMES on Suprarenal Disease.

Sir WALTER FLETCHER, in an address on Medical Research in Great Britain, pointed out how often our fine research work had been impeded by lack of money, quoting the facts that Newton and Faraday had been endowed by official positions, while Darwin's personal wealth permitted him to carry on his work independently. He named as the four conspicuous statesmen who had contributed to the and Disease, and spoke wisely on the possibility that the medical profession should become more an educational body, as a result of the public appreciation that psychological culture had claims equal to those of physical culture. He pointed out that to-day human progress had outstripped human adaptation, and drew a striking, almost biting, portrait of the leader of commerce attempting to obtain a few hours leisure, heading to a breakdown, while disguising his anxieties under the name of pleasure. He believed, he said, that society was adapting itself to the new conditions, but more consideration should be given to the mental and physical make-up of the individual, and he hoped that now that doctors, in directing the health of the community, were devoting attention to prevention as well as to remedy, that the selection of the proper career of young people would come more under medical guidance.

SOCIAL FUNCTIONS.

HONORARY MEMBERSHIPS.

The President of the Inter-State Post-Graduate Assembly of America, Dr. Charles H. Mayo, during the week of their visit to London, conferred the Honorary Membership of the Assembly upon H.R.H. the Duke of York; H.R.H. the Duke of Connaught; Rt. Hon. Austen Chamberlain, Minister of Foreign Affairs; Rt. Hon. Neville Chamberlain, Minister of Health; Lord Dawson of Penn; Lord Desborough, Chairman of the Pilgrims' Society; Sir Humphry Rolleston, Bt.; Sir John Bland-Sutton, Bt.; Sir William Arbuthnot Lane, Bt.; Sir StClair Thomson, Sir William Hale-White, Sir Holburt J. Waring, Sir John Y. W. MacAlister, Sir George Newman, Mr. W. Girling Ball, and Mr. Philip Franklin.

THE GUILDHALL BANQUET.

More than 600 sat down on Friday evening at the Guildhall banquet given by the Assembly, to which a number of distinguished visitors had been invited. Dr. Charles Mayo took the chair and proposed the health of H.M. the King and the President of the United States, both of which were drunk with musical honours. Mr. Neville Chamberlain, the Minister of Health, proposed the Inter-State Post-Graduate Assembly, his theme being the general practitioner as educator. Dr. Mayo, in responding, said that where the general practitioner did his duty, medicine would stand high in that community. He envied England its Ministry of Health and its Board of Education, each with a Secretary of State of its own. (These speeches have been made the subject of a leading article.) The British Medical Profession was proposed by Dr. Hugh Cabot and Dr. Woods Hutchinson, to which Lord Dawson of Penn responded. The last toast was that of the English-speaking Nations, proposed by Sir W. Arbuthnot Lane and Sir StClair Thomson, to which Dr. Franklin Martin, Director of the American College of Surgeons, responded. At the conclusion of the banquet Dr. Mayo conferred the honorary membership of the Assembly on Mr. Neville Chamberlain.

DINNER TO DR. MAYO.

combination of high professional skill, consideration of the best interests of the patient, and fully organised business methods. He referred to the versatility and modest lovable disposition of their guest, and emphasised the value of clinical congresses in cementing the bonds of friendship and good-fellowship between the great English-speaking peoples. Since the visit of our American friends in 1910 we were, he said, gradually becoming used to these friendly invasions, and he hoped that they would be continued. Dr. Charles Mayo, in his reply, paid a tribute to the work of his brother, Dr. William Mayo, and thanked the members of the Section of Surgery for their warm reception. Mr. J. C. C. Davidson, M.P., proposed "America and American Surgery," and Dr. Franklin Martin replied. The toast of "The Chairman," proposed by Sir James Berry, brought the proceedings to an end.

RECEPTION BY THE ROYAL COLLEGE OF SURGEONS OF ENGLAND.

In the afternoon of Friday, June 5th, the President and Council held a reception in honour of the American delegates and their friends in the Museum of the College, when Sir John Bland-Sutton, the President, delivered an entertaining half-hour address on the intriguing subject of the Psychology of Animals Swallowed Alive. His text occurred to him, he said, one evening after dinner, in the thought whether animals which swallowed their prey alive endured discomfort from the efforts of the prey to get out again. With regard to the story of Jonah in the whale, he had once thought a parallel of that incident could not be found in modern times, but he since discovered in the *Boston Post Boy* for 1771 an account, vouched for by eye-witnesses, of a sailor in a small whaling ship who had been taken into a whale's mouth, and had been eventually vomited up—"rather sick and dizzy, but alive." The lecturer then went on to describe the habits of a prickly fish with two powerful teeth used for crunching coral. This fish was often swallowed by sharks, and when swallowed was able to blow itself out to the size of a football, thus causing its host considerable discomfort—and worse, for with its powerful teeth it would gnaw its way right out through the shark's side. "What terrible agony," said the lecturer, "but what a just revenge!"

Another fish whose living meal often revenged itself was the "black swallower," the Chiasmodon. Its stomach was so distensible that it could swallow a fish much larger than itself. Putrefaction of too ample a meal sometimes preceded digestion, with the result that the gas-distended stomach brought the deep water Chiasmodon to the surface, where it could not live. Sir John Bland-Sutton then described several other instances of living meals, among fishes and snakes—of pike swallowing pike, of dogs consuming whole Alaskan frozen fish which were in ventro revived to activity, and finally of the adventures of a pet tree frog of his own. One story was of a snake which had swallowed a frog alive. The snake's owner laid the animal on a table to watch developments. Someone accidentally tapped the table, whereupon the snake jumped off and the interned frog was heard to squeak. At this the snake opened its jaws and ejected its meal, which, covered with slime, hopped away into safety. The lecture was greatly enjoyed by the guests, who recorded their appreciation in a very adequate manner.

A pleasant programme of music was discoursed throughout the remainder of the afternoon. The guests had the opportunity of inspecting the College museum and library, where many interesting old prints and portraits were on view and where a microscopical demonstration was staged.

DINNER WITH THE PILGRIMS.

The Duke of Connaught, as President of the Society, took the chair on Thursday evening, June 4th, at a dinner given by the Pilgrims at the Hotel Victoria, London, in honour of the medical visitors from the United States and Canada. The health of the American doctors was happily proposed by Mr. Austen Chamberlain, who disclaimed any connexion with a liberal profession, while acknowledging a profound debt to his professional advisers. He had, he thought, adopted a sufficient share of responsibility in matters of importance, so that it was an immense satisfaction to him to feel that his health was no business of his while he entrusted it to his medical adviser. In an eloquent conclusion, describing the progress made in the last generation in the study of tropical diseases, he coupled the name of Dr. Charles Mayo with the toast. Dr. Mayo, in acknowledging the happy feeling which had been engendered by the Royal welcome which had been extended to the Assembly in London, said that men from across the Atlantic had the same ideas as those that were found in the greatest city in the world, for they were of the same stock—a personal matter to himself whose family for 200 years had been buried in a Manchester churchyard and whose father walked a London hospital before deciding to make his way in America. Dr. Mayo then addressed the Duke of Connaught, Mr. Chamberlain, and Lord Desborough, the Chairman of the Pilgrims, and declared them honorary members of the Inter-State Assembly.

LUNCHEON TO DR. MAYO.

At an informal luncheon earlier on the same day, presided over by Mr. A. Webb-Johnson at the Middlesex Hospital, the connexion of Dr. Mayo with London, and especially with Middlesex Hospital, was brought prominently to notice, for at the luncheon there was exhibited to Dr. Mayo the portrait of his great uncle, who was a surgeon to the Middlesex Hospital 100 years ago, and was one of the founders of the medical school there.

A number of American doctors and friends attended a garden party in the square of St. Bartholomew's Hospital on Thursday afternoon, when the Great Hall, Hospital Dispensary, and the Medical College buildings were on view, and Sir D'Arcy Power gave a short address on the antiquities of the hospital and its neighbourhood.

The medical staff of the Central London Throat, Nose, and Ear Hospital entertained a party of 40 to luncheon at the Carlton Hotel on Tuesday in connexion with the visit of the Inter-State Post-Graduate Assembly of America, followed by a demonstration of special cases, operations, and lectures by members of the staff at the hospital.

THE BATEMAN APPEAL.

As already explained in THE LANCET, it has been felt that material assistance ought to be offered to Dr. Bateman to meet the legal expenses of his successful appeal and to make good the deficiency in his professional income. Accordingly the Bateman Fund has been opened and lists of contributions have appeared in recent issues. We have received additional contributions as follows:—

	£	s.	d.
Already received and acknowledged ..	465	18	0
A Grateful Patient	5	5	0
Anonymous	1	0	0
Dr. O'Sullivan	1	0	0
"Miles"	0	10	6
	473	13	6

Remittances should be forwarded to the Manager of THE LANCET, 423, Strand, W.C. 2, and made payable to the "Bateman Fund Account."

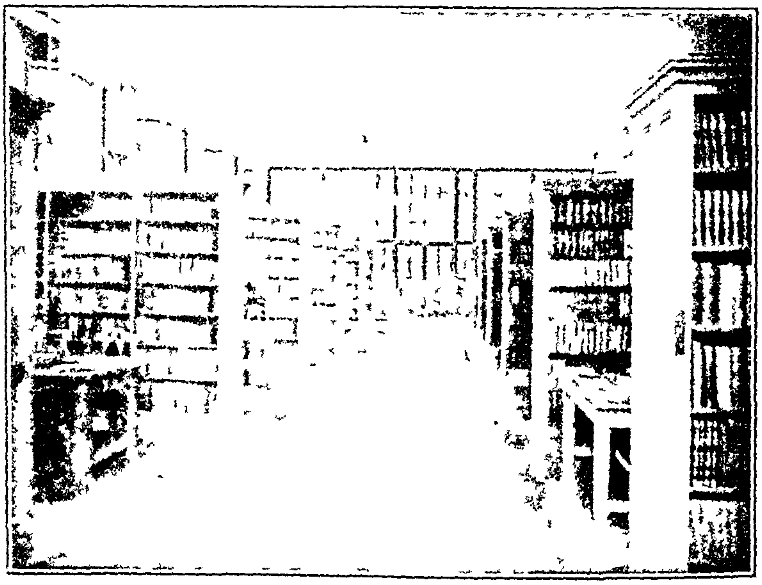
PRESTON ROYAL INFIRMARY.—This hospital of 200 beds is to be enlarged by a new wing containing 72 beds, an additional operating theatre, and a laboratory, at a cost of £30,000.

BRISTOL MEDICAL SCHOOL.

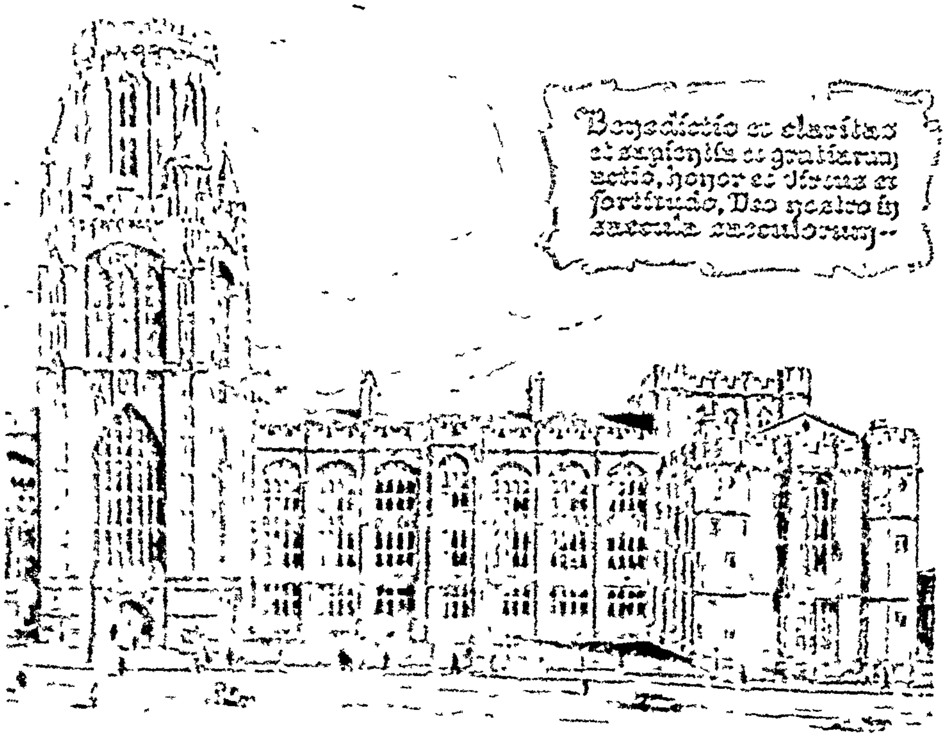
ROYAL OPENING OF NEW UNIVERSITY BUILDINGS.

"At [illegible] time it was thought that a university town was the seat of a university and nothing else, and people would [illegible] something incongruous in the idea of a university being placed in a great commercial and manufacturing town like Bristol. But it has been the most characteristic feature in the recent development of higher education that the new universities have been founded in busy and populous centres. I am convinced that this is in the best interests of both learning and business, and that the [illegible] interaction of the two is stimulating and helpful to each other."

These words were spoken by His Majesty the King when, accompanied by Queen Mary, he formally opened the new buildings of University of Bristol on Tuesday, June 9th. This beautiful and dignified structure, of which we reproduce a drawing from the souvenir booklet published by Messrs. J. W. Arrowsmith, Ltd., is due to the munificence of the Wills family, and the occasion of the opening marks a notable event in the annals not only of the 16 year old University, founded by a Charter from King Edward VII., but of the ancient city. In 1909 the University College of Bristol and the Merchant Venturers Technical College were merged into a new university, but incorporation of the medical school was not then made complete. As the result of the suggestions from the University Grants Committee and the Treasury, the teachers of clinical subjects in the medical faculty who had preserved a partial autonomy have now surrendered their proprietary rights to the University, and the whole medical curriculum comes under University management. The medical student of to-day in Bristol enjoys exceptional opportunities and advantages. The preliminary studies of chemistry, biology, and physics are carried on in some of the newest and most up-to-date laboratories in the kingdom. The chemical wing was built in 1911 and the new physics wing built and endowed by the late Mr. H. H. Wills is nearing completion. The Department of Physiology is situated in part of the wing by the Arrowsmith Tower, the tower which forms a striking landmark and characteristic feature of the new buildings. Above the physiological theatre and laboratories is the Department of Pathology. The new building contains a fine medical library, of which we reproduce an illustration, in which the separate libraries of the Royal Infirmary, General Hospital, the Bristol Medico-Chirurgical Society, and the University College are housed together. Although the medical faculty for Bristol University is of very recent creation, the Bristol Medical School was founded over 100 years ago. Its early history is sketched by Dr. J. A. Nixon in the current issue of the *Bristol Medico-Chirurgical Journal*, in which he tells how the project of founding a medical school in connexion with the infirmary was first considered in 1816. By 18[illegible] various independent courses of



Medical Library.


Benedictio et claritas et sapientia et gratiarum actio, honor et virtus et fortitudo, Deo nostro in saecula saeculorum.

University of Bristol: The New Buildings.

lectures had been combined to form two recognised medical schools, the School of Anatomy and Medicine in Limekiln-lane recognised by the Apothecaries' Hall), and the Bristol Medical and Surgical School (recognised by the Royal College of Surgeons). Three years later these schools were amalgamated to form the Bristol Medical School. The inauguration of the new buildings will surely open a new era of opportunity for the study of medicine in Bristol. All the various authorities in Bristol responsible for the hospital management have taken up the most friendly and helpful attitude towards the University and its medical students, both undergraduate and post-graduate. The student has at his disposal 630 beds for the study of clinical material, divided between the Royal Infirmary and the General Hospital, and in addition 500 beds in the large modern Poor-law hospital at Southmead. The City Fever Hospital has a total of 271 beds, and there are opportunities to study tuberculosis at the Municipal Dispensaries of the Frenchay Park Colony for children. Further, students are welcomed at the small but well-equipped orthopædic hospital which contains 30 beds.

ROYAL FREE HOSPITAL:
THE FESTIVAL DINNER.

THE Festival Dinner of the hospital was held on Tuesday, June 9th, in the Guildhall, London, E.C., by permission of the Corporation. Lord Riddell, President of the hospital, was in the chair, and presided over a very large company of guests of both sexes. The occasion was characterised by some good speaking, a spirit of general enthusiasm for the object of the dinner, and a substantial pecuniary harvest.

After the loyal toasts, the Rt. Hon. J. H. Thomas, M.P., proposed the Prosperity of the Hospital in terms of real eloquence. He started humorously by observing that, had it not been for a fatal accident which terminated its existence, the representatives of the Labour Government would have been present last year at the annual banquet at the Guildhall; he had arranged to deliver a really Imperialistic oration on that occasion, and though that speech could not be made he was grateful for the opportunity which Lord Riddell had given him of speaking in the Guildhall. He proceeded to draw once again the old picture of the pathetic position of the sick poor, but did so in new and vivid terms while testifying to the value of hospital work. The toast was replied to by the Chairman and Dame Louisa Aldrich-Blake. Lord Riddell said that it appeared that any self-respecting hospital that desired to raise money must either be falling down, or about to close many of its wards, or have a substantial overdraft at the bank. In the case of the Royal Free Hospital he admitted the existence of the overdraft, but was unable to say that the fabric was falling down or that the Governors were about to close any of the wards. On the contrary, he stated the building to be as solid as ever, while not only would no wards be closed, but the appeal that night was directed to obtain money to build new children's wards. He reinforced his plea for children by a quotation from a speech at a charity dinner made by Charles Dickens 80 years ago, and disclosed the magnificent generosity of Mr. Alfred Langton, "a fairy of Gray's Inn-road." Dame Louisa Aldrich-Blake, who was received with continued applause, spoke out of a long association with the hospital, upon its position as the seat of the London School of Medicine for Women, and took the opportunity of congratulating Sir James Berry, the senior surgeon, upon his recent knighthood.

The toast of the Guests, proposed by Dr. J. Walter Carr, was responded to by Lord Jessel and Mr. C. T. Cramp; and that of the Medical Profession, proposed by Sir Charles Wakefield, was responded to by Sir Humphry Rolleston and Sir Squire Sprigge.

The sum of £25,000 was raised at the dinner, including a donation of £5000 from Mr. Langton, and one of nearly £4000 from Lord Riddell.

Correspondence.

"Audi alteram partem."

CLEAN MILK IN HOSPITALS.

To the Editor of THE LANCET.

SIR,—In view of Dr. Chalmers Watson's admirable propagandism in connexion with supplies of clean milk, and the special article by Dr. Savage on the Milk-supply and its Improvement appearing in your columns, it appears desirable to put on record the Aberdeen position. In October, 1924, Aberdeen Town Council gave authority to have certified milk used in all the public health institutions of the city. These include the City Fever Hospital and Tuberculosis Hospital, Burnside Home for Mothers and Babies, Loch-street Home for Mothers and Babies, and the Charlotte-street Day Nursery. At the same time the town council authorised that certified milk only should be supplied to all mothers and children obtaining milk in their homes from the health department, and also to all tuberculous patients similarly receiving milk in their homes.

With a view to encouraging the production of certified milk, the Aberdeen dairymen have been informed that the town council contract will necessarily be divided among dairymen retailing certified milk. At the same time, producers of milk in the Aberdeen area have been assured that the health department will do everything in its power to assist them should they be prepared to supply certified milk. Thus, whenever a dairyman is prepared to supply certified milk, the public health department is prepared to analyse the milk samples twice weekly, free of charge, and to send results of the analyses, both chemical and bacteriological, to the milk producer for his guidance. The milk producers have also been informed that they will be given a period of some six months in which to adjust their production of milk, so that it meets the certified standard, without any interference from the health department apart from helpful advice. The milk producer who at present holds the Aberdeen Town Council contract for certified milk is using the bacteriological counts, as supplied by the health department, to form the basis of the bonus system on which he pays his workers. Thus the milk counts as sent to the milk producer are posted on a notice board every week at the two farms producing the milk for the information of the workers, and the workers receive a bonus to their wages descending in amount according as the count of the milk ascends from under 5000, under 10,000, under 15,000, &c., organisms.

When certified milk was thus introduced into Aberdeen some seven months ago, all the medical practitioners of the city were circularised, urging them to do everything in their power to get their patients to use certified milk in their households. The wide publicity given by your columns to the matter of a clean milk-supply is of the most useful description and will, I am confident, be productive of much good.—I am, Sir, yours faithfully,

J. PARLANE KINLOCH,
Medical Officer of Health, Aberdeen.
June 8th, 1925.

BAKER'S ITCH AND WORKMEN'S COMPENSATION.

To the Editor of THE LANCET.

SIR,—Captain J. T. Ainslie Walker expresses the opinion that the industrial ailment "baker's itch" (baker's eczema) is attributable to the use of certain so-called "flour-improvers," and he quotes Dr. Prosser White as stating that this affection is unknown in France and the United States, where these additions to flour are forbidden. I have brought forward definite facts[1] to show that in at least one bakery potassium persulphate was the cause of the trouble.

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[1] THE LANCET, August 11th, 1923, p. 279.

It is stated by the trade that baker's eczema was not unknown in this country prior to 1911—the year in which persulphate flour-improvers were first patented —but it is obvious from the continually recurring interest in this subject that it is much more common now than formerly. I agree with Dr. White that "improvers" are not the whole story, but I cannot subscribe to his statement that "no improvers are used in the confectionery trade." Confectioners may not "add" improvers to the flour they use, but they certainly often use flour containing "improvers" added by the millers. It may be that the comparative immunity of the bakers in the United States and France is in part accounted for by a more general use of machinery, as distinguished from the handling of wet dough practised here in many small bakeries. Nevertheless, I am convinced that baker's eczema has arisen in this country, in known instances recorded by me, by reason of the employment of these foreign chemicals which have been added to flour. Such additions are, in my opinion, unjustifiable on any ground.

I am, Sir, yours faithfully,

Arnold Rowsby Tankard, F.I.C.,

June 5th, 1925. City Analyst, Hull.

COLLOIDAL KAOLIN.

To the Editor of The Lancet.

Sir,—The authoritative statements of Sir Wm. J. Pope and Prof. John W. H. Eyre in your issue of May 30th add weight to the rapidly accumulating evidence regarding the curative properties of colloidal kaolin. Since you published my original paper (The Lancet, 1923, i., 132) the medicinal use of colloidal kaolin has extended widely. The Kaylene Company (which prepared colloidal kaolin for medicinal use at my suggestion) is now producing four preparations: Kaylene, plain; kaylene saline (i.e., colloidal kaolin with saline aperient); kaylene mint (colloidal kaolin with oil of peppermint); and kaylene lax (colloidal kaolin with phenol-phthalein).

Experience is fully bearing out the claims I made for it, and while I have nothing essential to add, I desire to emphasise a few points: 1. Colloidal kaolin must be of guaranteed purity and sterility and in the finest attainable state of mechanical subdivision. 2. Colloidal kaolin counteracts the toxæmia which results from the ingestion of unsuitable food—i.e., food that is apt to decompose in a toxic bowel. It is unwise, however, to exploit this way of escaping the consequences of wrong feeding. Obviously the best results are to be obtained by taking colloidal kaolin while using the diet and régime most suited to the relief of stasis. 3. Liquid paraffin as well as colloidal kaolin is nearly always needed in stasis. 4. Colloidal kaolin should not be given—in the hope that it will cure—without first deciding by X ray investigation that no mechanical block (kink, controlling appendix, scar of an ulcer, or neoplasm) needs surgical treatment.

I am, Sir, yours faithfully,

Upper Wimpole-st., W., June 6th. Alfred C. Jordan.

(Sahli) of Sahli's new hæmometer are meant is still maintained. I hope this will do to elucidate the matter.

To understand how Dr. Hunter could find greater differences than 1/5, I re-calculated my indexes with the following result: Of my 18 indexes I found now for 11 the same value as in the blood tables in my article; for 3 a value of 0·01 higher or lower, for 2 a value 0·1 higher; and for 2 others a value of 0·03 and 0·07 lower than in the tables. Only the two latter re-calculations are in the advantage of Dr. Hunter's presumption that my indexes should be too high. The differences can probably mostly be explained in a different way in which the decimals are neglected in the calculations, and even if slight errors are made, these are too small to have any practical significance and do not affect the conclusions, which have to be drawn from my figures.

I trust that Dr. Hunter and the English reader will be satisfied with this elucidation and that I have convinced Dr. Hunter that I use the usual standards. In conclusion, I wish to thank him for having cured me from a bad habit.

I am, Sir, yours faithfully,

The Hague, June 6th. C. Elders.

POST-GRADUATE TEACHING IN MIDWIFERY.

To the Editor of The Lancet.

Sir,—I was most interested in reading Dr. Margaret Balfour's recent letter (The Lancet, May 23rd, p. 1101) as my own experiences in seeking post-graduate work in midwifery after the war, in 1919, were much the same as hers, both in London and at the Rotunda. Having graduated elsewhere, and desiring to see something of London's methods, I applied to the Fellowship of Medicine, but the obstetrician to whom I was referred from there received me unwillingly and advised me to return to my own medical school or else to go to Dublin, saying London could receive no new students. After various similar inquiries I wrote to the Rotunda contemplating six months' work there, but the nature of the tuition was such that I transferred from there when one month had elapsed, like very many other graduates recently demobilised. At the Rotunda the clinics were crowded with students, graduates, and large numbers of pupil midwives, the Master turning to the latter for a correct reply when this was not furnished by the particular graduate or student whom he questioned!

If greater facilities for post-graduate tuition and opportunity for work in obstetrics are provided here fewer doctors will go to Vienna and Paris and other continental schools, as they at present do.

I enclose my card, and am, Sir, yours faithfully,

June 6th, 1925. M.B., Ch.B., L.M.

A DISCLAIMER.

To the Editor of The Lancet.

Sir,—May I ask you to publish a disclaimer of my having been in any way responsible for the inspiration and publication in the current issue of the *Ebbw Vale Weekly Argus* of a paragraph entitled "Doctor's Splendid Record: Two Medical Men Exonerated from Blame."

An inquest—held after the death of a patient from pneumonia supervening upon "radical operation" for inguinal hernia—was held at the instance of the deceased's relatives to establish the fact that the train of circumstances which led up to his death was the result of an accident—i.e., the original rupture. But when a death occurs after an operation there is wont to arise a suspicion that something went wrong with the operation—and the subtitle "medical men exonerated" suggests this view.

I simply mentioned the usual percentage of deaths after the "radical cure operation" to show that my average was well within the record.

I am, Sir, yours faithfully,

H. Neville Taylor.

The Hospital, Ebbw Vale, June 3rd, 1925.

Parliamentary Intelligence.

HOUSE OF COMMONS.

Tuesday, June 9th.

Taxation of Patent Medicines.

The House went into Committee on the Finance Bill. Mr. Hope (Chairman of Committees) in the chair.

Clause 2 provides that the additional excise duties imposed by Section 11 of the Finance (No. 2) Act of 1915 upon medicines liable to duty shall continue to be charged until August 1st, 1926.

On the motion that the clause stand part of the Bill,

Captain Wedgwood Benn complained of the way in which it was drawn. It was an elementary canon of taxation that the taxpayer should know exactly what, and upon what, he had to pay. The clause was the worst possible example of legislation by reference. It referred to the Finance Act of 1915, which in turn referred back to the Medicine Stamps Act of 1802, and that measure was related to the Tonnage and Poundage Act of Charles II. The Act of 1802 set out a schedule of medicines liable to be taxed. Giving examples of the medicines, he quoted the following: Asiatic bilious pills, Austin's chalybeate pills, Addison's re-animating European balsam, Clyde balsam, Guest's Welcome Guest powder, and Wheatley's ointment and fluid. The Act of 1812 revised the schedule and that was the last revision he could find. He asked if it would be possible between now and next year to look into this question, and to include in the next Finance Bill a clause, stating plainly what the taxes were and on what commodities they were levied.

Mr. W. Guinness (Financial Secretary to the Treasury) said that the first legislation on this subject was passed in 1783. Since then there had been repeated amendments. He admitted that it was not very easy for anyone to summarise the principles on which the duties were imposed. Speaking generally, there were three alternative tests of these preparations which were liable to duty. The first test was that they must be advertised or, in other words, recommended as a specific for some illness or disease. If they said that so-and-so's preparation cured headache, they were liable to duty, but if they said that such-and-such an ointment was good for the skin, and therefore not a specific for a disease, they did not come within that definition. The second test was that it should be secret, and the third was that it should be proprietary. The proprietary test covered most of the preparations that came under the old patent medicine duties. The codification of legislation on the subject was a matter into which he would like to look further, but it concerned the Ministry of Health rather than the Treasury. A few years ago a Select Committee inquired into this subject, but nothing was done as a result of their report. There were many more complicated forms of revenue collection, which were based upon a far more scattered legislative code than this particular patent medicine duty. Our customs legislation had not been codified for many years, but in view of the fact that it was working smoothly he did not think the House would see any cause to resist the retention of this clause. The duty was doubled in 1915 as a war tax, and was now yielding over £1,300,000, which was nearly three and a half times as much as before it was increased. That showed that the tax was useful from a revenue point of view, and it was not pressing hardly on any section of the population.

Sir A. Mond said that he did not admit that Mr. Guinness's statement about the customs was an adequate reason for not dealing with this matter. It was time that both questions were cleared up. This matter had nothing to do with the Ministry of Health. If the recommendations of the Patent Medicines Committee which sat some time ago were adopted it would be necessary entirely to alter the process by which these duties were levied. There were a large number of American patent medicines or mixtures being imported into this country. The importers of these foreign productions were given an advantage compared with those of British manufacture. He suggested that an expert committee should be set up to study the question.

Dr. Haden Guest said that the composition of most of these patent remedies was perfectly well known and were quite simple. Their vogue depended on the extent to which they were advertised. He thought that it was right that the law on the subject should be codified and brought up to date before the next Finance Bill was produced, and he hoped that would be done. If they reduced the law to a reasonable and intelligent code more attention might be paid to the demerits of some of these productions.

The clause was agreed to.

Progress in Housing.

Sir William Davison asked the Minister of Health what progress had been made in the provision of houses during the past three months.—Sir Kingsley Wood replied: During the three months ended May 1st last 21,674 houses were completed in England and Wales in connexion with State-assisted schemes, and 50,202 were in course of construction on May 1st. Particulars are not available as to the number of houses erected during the same period by private enterprise without Exchequer assistance.

Medical News.

University of London.—At examinations held recently the following candidates were successful:—

Third (M.B., B.S.) Examination for Medical Degrees.

Honours.—John C. Barrett (b), St. Thomas's Hosp.; Richard A. Brews (d, e), London Hosp.; Charles P. Craggs (d), St. Bart.'s Hosp. and Durham University; William Evans (d), London Hosp.; Reginald S. Johnson (a, University Medal) and Frederick D. S. Poole (a), St. Bart.'s Hosp.; Mary E. Tyars (a, e), Univ. Coll. Hosp.; Iris V. I. Ward (d), London Sch. of Med. for Women; and Arthur J. Wrigley (b), St. Thomas's Hosp.

(a) Distinguished in Medicine. (b) Distinguished in Pathology. (d) Distinguished in Surgery. (e) Distinguished in Midwifery.

Pass.—Harriet E. Acheson, London Sch. of Med. for Women; William L. Ackerman, London Hosp.; Francis G. Allan, St. Thomas's Hosp.; Harold G. Anderson, St. Bart.'s Hosp.; Doris M. Baker, St. Mary's Hosp.; Margaret A. Bannerman and Alison Elfreda M. Barnaby, London Sch. of Med. for Women; Philip C. Bennison, Guy's Hosp.; Dora M. Berry, London Sch. of Med. for Women; Thomas S. Blacklidge, Guy's Hosp.; Solomon Bloom, St. Bart.'s Hosp.; William G. Booth and Ralph Brooke, Guy's Hosp.; Hilda L. Byett, London Sch. of Med. for Women; John A. Carman, London Hosp.; Leslie I. M. Castleden, St. Bart.'s Hosp.; Edward H. P. Cave, King's Coll. Hosp.; Edith I. Clark, Univ. Coll. Hosp.; Harold G. Close, Guy's Hosp.; Doris M. Collins, London Sch. of Med. for Women; George E. C. Collis, Univ. Coll. Hosp.; Cecily D. Crosskey, London Sch. of Med. for Women and Birmingham University; Cedric K. David, Cecil H. Devereux, and Alfred C. M. Elman, Univ. Coll. Hosp.; Mary H. Elmitt, Barbara Finch, and Mary S. A. Foden, London Sch. of Med. for Women; Francis G. France, St. Bart.'s Hosp.; Ian W. Gallant, Univ. Coll. Hosp.; Florence M. Gamble, London Sch. of Med. for Women; Katharine A. C. Gillie and Arthur W. Grace, Univ. Coll. Hosp.; Geoffrey E. R. Hamilton, King's Coll. Hosp.; Alfred B. Hodgson, Birmingham University; Maurice W. P. Hudson, St. Thomas's Hosp.; Roland G. W. Husbands, Univ. Coll. Hosp.; Beatrice Jervis-White-Jervis, St. Mary's Hosp.; Ernest F. Johnson, St. George's Hosp.; Bertram H. Jones, St. Thomas's Hosp.; Horace Joules, Middlesex Hosp.; Noel E. Harnwell Kemm, Bristol University; Victor J. F. Lack, London Hosp.; Muriel A. Lester, London Sch. of Med. for Women; Neville L. Lloyd, Guy's Hosp.; Alec McMillan, Birmingham University; Richard G. Mallphant, Univ. Coll. Cardiff and Univ. Coll. Hosp.; Bernard A. J. Mayo, St. Bart.'s Hosp.; Joseph H. Moore and Henry S. Morley, Univ. Coll. Hosp.; Marjorie Murrell, Joseline W. Nagel, and Elizabeth H. R. Newbolt, London Sch. of Med. for Women; Margaret D. Nichols, London Hosp.; Helen E. D. E. Ornstein, King's Coll. Hosp.; William E. Rees, St. Thomas's Hosp.; Laura M. Rhodes, London Sch. of Med. for Women and St. Mary's Hosp.; Frederick T. Ridley, Birmingham University; John J. R. Robinson, St. Thomas's Hosp.; Sybil H. G. Robinson, London Hosp.; Edith M. Ross-Johnson and Frank E. E. Schneider, Univ. Coll. Hosp.; William G. Sears, Guy's Hosp.; Charles N. Smith, Univ. Coll. Hosp.; Sylvia M. T. Smith, Univ. Coll. Cardiff and Bristol University; Victor A. T. Spong, St. Bart.'s Hosp.; Nettie H. Stein, London Sch. of Med. for Women; Ernest V. Suckling and Glyde P. Tatton, London Hosp.; Catharine F. Taylor, London Sch. of Med. for Women; Ronald W. Thomas, London Hosp.; William R. Thrower, St. Bart.'s Hosp.; Mary M. Wickham, London Sch. of Med. for Women; Edward R. P. Williams, Univ. Coll. Hosp.; Edith V. Wood, London Hosp.; and Joyce P. Yeoman, St. Mary's Hosp.

King's College.—At the last meeting of the Senate of the University final approval was given to proposals of the Delegacy for extensions to the Department of Physiology. Building will be commenced at an early date and it is expected that the new rooms will be ready by the end of the long vacation. By the new building facilities will be provided for experimental research, a professor's room, and for the teaching of advanced practical mammalian physiology. Approval was also given for the establishment of two research studentships, each of the annual value of £100, while a sum of £50 has been set aside to meet the expenses of such research.

Royal Faculty of Physicians and Surgeons of Glasgow.—At the monthly meeting of the Faculty held on June 1st the following were admitted (after examination) as Fellows of Faculty:—

John Gardner, M.D., Glasgow; Stanley Galbraith Graham, M.B., Glasgow; Chandiram Hassomal Primlani, M.B., B.S., London; James Hinton Robertson, M.B., Ch.B., Glasgow; and James Taylor, L.R.C.P. Edin., F.R.C.S. Edin., Glasgow.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen-square, Bloomsbury, W.C. 1.

POST-GRADUATE COURSE: MAY-JUNE, 1925.

CLINICAL LECTURES AND DEMONSTRATIONS.

MONDAY, June 15th.—2 P.M., Out-patient Clinic: Dr. Hinds Howell. 3.30 P.M., Localising Signs of Cerebral Lesion: Dr. Riddoch.

TUESDAY, June 16th.—2 P.M., Out-patient Clinic: Dr. Walshe. 3.30 P.M., Compression Paraplegia: (1) Extramedullary: Dr. Grainger Stewart.

THURSDAY, June 18th.—2 P.M., Out-patient Clinic: Dr. Kinnier Wilson. 3.30 P.M., Cerebral Vascular Disease: Dr. Gordon Holmes.

FRIDAY, June 19th.—2 P.M., Out-patient Clinic: Dr. Gordon Holmes. 3.30 P.M., Surgery of Spinal Cord: Mr. Percy Sargent.

COURSE OF LECTURES AND DEMONSTRATIONS ON THE PATHOLOGY OF THE NERVOUS SYSTEM.

MONDAY, June 15th.—12 noon, The Neuron: Dr. J. G. Greenfield.

A COURSE OF CLINICAL DEMONSTRATIONS will be given by Mr. H. J. Macbride, chiefly on METHODS OF EXAMINATION OF THE NERVOUS SYSTEM, in the Wards at 10 A.M. on Tuesdays and Fridays. The fee for this Course is £2 2s.

Mr. Armour and Mr. Sargent operate at the Hospital on Tuesday and Friday mornings at 9 A.M., or at such other times as may be announced.

Any part of the Course may be taken separately. Special arrangements will be made for those unable to take the whole Course.

Fees should be paid to the Secretary of the Hospital at the office on entering for the Course.

J. G. GREENFIELD, Dean of Medical School.

THE LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, Leicester-square, W.C. 2.

TUESDAY, June 16th.—5 P.M., Dr. Fox: Seborrhoeic Affections of the Skin.

THURSDAY.—5 P.M., Dr. Whitfield: Eczema.

THE JAMES MACKENZIE INSTITUTE FOR CLINICAL RESEARCH, St. Andrews.

MONDAY, June 15th.—10.45 A.M., Dr. Orr: Cardiac Irregularities. 12 noon, Dr. Hynd: Clinical Examination of Urine. 4.30 P.M. (at the Bute Medical Buildings), Prof. Waterston: Structure and Development of the Heart.

TUESDAY.—10.45 A.M., Dr. Maitland Ramsay: The Eye: Its Response to Effort, 12 noon, Dr. Orr: Demonstration of Polygraph. 4 P.M., Dr. Bryson: Capillaries.

WEDNESDAY.—10.45 A.M., Dr. Rowand: Suspected Tuberculosis in Children. 12 noon (at the Bute Medical Buildings), Dr. Hynd: MacLean's Method of Estimating Blood-sugar. 4 P.M. (at the Bute Medical Buildings). Prof. Herring: The Action of Insulin.

THURSDAY.—10.45 A.M., Dr. Paton: A School Outbreak of Diphtheria. 12 noon, Dr. Hynd: Chemical Composition of the Blood. 4 P.M. (at the Royal Infirmary, Dundee), Prof. Patrick: Clinical Demonstration.

FRIDAY.—10.45 A.M., Dr. Paton: Interpretation of Radiograms. 12 noon, Mr. Smith: Radiography of Duodenal Ulcer. 4 P.M., Case Reading.

Appointments.

BULMAN, M. W. B., M.B. Lond., F.R.C.S. Eng., has been appointed one of the Medical Referees under the Workmen's Compensation Act for the Districts of the Aylsham, Downham Market, East Dereham, Fakenham, &c., County Courts (Circuit No. 32), in place of Sir Hamilton Ballance (resigned).

ELLMAN, PHILIP, M.R.C.S. Eng., L.R.C.P. Lond., Assistant Medical Superintendent to the West Middlesex Hospital, Isleworth, Middlesex.

Manchester Royal Infirmary: BRYCE, A. G., M.D., F.R.C.S., D.P.H., Resident Surgical Officer; SUTHERLAND, D. M., F.R.C.S. Eng., Surgical Registrar; DUGUID, J. B., M.B. Aberd., Senior Pathological Registrar and Curator of the Royal Infirmary Museum; TWINING, E. W., M.R.C.S., L.R.C.P. Lond., Senior Assistant Medical Officer in the X Ray Department.

Westminster Hospital: DAVIES, J., M.R.C.S., L.R.C.P. Lond., DAVIES, M., M.R.C.S., L.R.C.P. Lond., DAVIES, W. H., M.R.C.S., L.R.C.P. Lond., House Physicians; DUNLOP, H. A., M.R.C.S., L.R.C.P. Lond., COLES, B. A., B.Sc. Wales, M.R.C.S., L.R.C.P. Lond., WILSON, J. G., M.B., B.S., M.R.C.S., L.R.C.P. Lond., D.P.H. Lond., House Surgeons; ISAACS, E. J., M.R.C.S., L.R.C.P. Lond., Resident Obstetric Assistant.

Certifying Surgeons under the Factory and Workshop Acts: CAMPBELL, T., L.M.S.S.A., Sandy District of Bedford; MACMILLAN, C., M.B., Ch.B.Glasg., Tunbridge Wells.

Vacancies.

For further information refer to the advertisement columns.

Birkenhead and Wirral Children's Hospital.—H.S. £100.

Bradford Children's Hospital.—H.S. £100.

Brighton, Royal Sussex County Hospital.—Hon. S.

Cancer Hospital, Fulham-road, S.W.—H.S. at rate of £100.

Chichester, Graylingwell Mental Hospital.—Jun. M.O. £450.

City of London Mental Hospital, near Dartford, Kent.—Jun. M.O. £350.

Dreadnought Hospital, Greenwich.—H.P. and H.S. Each at rate of £110.

Glamorgan County Council.—Dental S. £500.

Gordon Hospital, Vauxhall Bridge-road, S.W.—Res. H.S. at rate of £75.

Great Yarmouth Hospital.—H.S. at rate of £150.

Hampstead General and North-West London Hospital, Haverstock-hill, N.W.—H.P., H.S., Cas. M.O., and Cas. Surg. O. All at rate of £100.

Hospital for Sick Children, Great Ormond-street, W.C.—H.S. Also H.P. Each at rate of £50.

Hull Royal Infirmary.—Asst. H.S. at rate of £130.

Kirbymoorside, Yorkshire County Orthopædic Hospital.—H.S. £250.

Lanchester Rural District Council, &c.—M.O.H. £800.

London Jewish Hospital, Stepney Green, E.—Asst. S. to Ear, Nose, and Throat Dept. and Asst. S. to Gynæcological Dept.

London Lock Hospital, 91, Dean-street, W.—Clin. Asstships.

Manchester, Ancoats Hospital.—Res. S.O. £200. Also H.S. at rate of £100.

Manchester, St. Mary's Hospitals.—Two H.S.'s. Each at rate of £50.

Manchester University and Royal Infirmary.—Director of Lab. of Clin. Investigations. £600.

Margate, Royal Sea Bathing Hospital.—H.S. at rate of £200.

Newcastle-on-Tyne, Royal Victoria Infirmary.—Hon. Asst. S.

Northampton General Hospital.—Hon. S.

Preston and County of Lancaster Royal Infirmary.—Jun. H.S. £150.

Queen's Hospital for Children, Hackney-road, Bethnal Green, E.—Asst. S.

Royal London Ophthalmic Hospital.—Refraction Asst. £100 for two mornings a week.

St. Peter's Hospital for Stone, &c., Henrietta-street, Covent Garden, W.C.—Clin. Assts.

Sudan Government, Wellcome Tropical Research Laboratories, Khartoum.—Asst. Bacteriologist. £E.720.

Surrey County Council.—Asst. M.O.'s in Pub. Health Dept. £600.

University College Hospital, Gower-street, W.C.—Asst. Radiologist at rate of £300.

West Bromwich and District Hospital.—Res. Asst. H.S. £180.

West London Hospital, Hammersmith-road, W.—H.P., H.S., Aural H.S., and Res. Cas. O. Each at rate of £100.

Willesden General Hospital, Harlesden-road, N.W.—Vacancy on Hon. Med. Staff.

Wolverhampton and Midland Counties Eye Infirmary.—H.S. £200.

Births, Marriages, and Deaths.

BIRTHS.

BULMAN.—On June 7th, at Baggallay-street, Hereford, the wife of Dr. J. R. Bulman, of a son.

DUPONT.—On May 31st, at Bridge House, Frome, the wife of Dr. Dupont, of a daughter.

MARRIAGES.

CHRISTIE—LONGWILL.—On June 4th, at St. Columba's Church, Pont-street, London., Graham Wilson Christie, M.C., F.R.C.S.E., to Josephine Wright, daughter of Walter Longwill, Woodhey-road, Rock Ferry, Cheshire.

FULLER—INGRAM.—On June 1st, quietly, at St. James's Church, Muswell Hill, Andrew Radburne Fuller, M.R.C.S., L.R.C.P., D.P.H., to Elizabeth Mary, younger daughter of Dr. and Mrs. P. R. Ingram, of Muswell Hill, N.

ROCYN JONES—LLEWELYN.—On June 4th, at St. Paul's, Portman-square, W., Arthur Rocyn Jones, M.B., F.R.C.S., of 146, Harley-street, W., to Margaret, second daughter of the Rev. D. J. Llewelyn, formerly vicar of Beaufort, and Mrs. Llewelyn.

STEPHEN—THOROGOOD.—On June 4th, at St. Dunstan's Parish Church, Cheam, Surrey, Dr. William H. Stephen, M.B., C.M., of Westborough-road, Westcliff-on-Sea, to Ena Thorogood, daughter of the late A. R. Thorogood, of Pitsea.

WILTSHIRE—TIBBETS.—On June 3rd, at St. Matthew's, Westminster, Harold Wiltshire, D.S.O., M.D., F.R.C.P., to Ellen, daughter of the late Edward Tibbets, M.D., of Bradford.

DEATHS.

KEEN.—On June 3rd, after a short illness, Dr. Ernest Beresford Keen, T.D., Major, 13th London Regt. and R.A.M.C. (T.A.).

LEWIS.—On June 8th, at Hamilton-terrace, St. John's Wood, N.W., after a very brief illness, Edward John Lewis, M.B., F.R.C.S., aged 65 years.

SIRCOM.—On June 1st, at a nursing home in Bristol, Edmund Ralph Sircom, M.R.C.S., L.R.C.P., of Romford-road, Stratford, Essex.

SUTHERLAND.—On June 6th, at Pembridge-villas, W., Deputy-Surgeon-General Philip Warren Sutherland, I.M.S., in his 94th year.

WHITCOMBE.—On May 30th, at the Royal Berkshire Hospital, Reading, the result of a motor-cycle accident, Charles Henry Whitcombe, F.R.C.S.E., South Cerney, aged 69.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Some Anomalies
OF
LOCAL PUBLIC HEALTH ADMINISTRATION.

Being the Presidential Address to the Section of State Medicine and Municipal Hygiene of the Royal Institute of Public Health, on May 27th, 1925,

BY SIR ARTHUR NEWSHOLME, K.C.B., M.D., F.R.C.P. LOND.,
LATE PRINCIPAL MEDICAL OFFICER, LOCAL GOVERNMENT BOARD.

THE title of this Section indicates its special concern with problems of central and local public health government; and my remarks cannot be more usefully directed, especially at the present time, than in indicating some of the long overdue reforms in our administrative machinery which are called for by the advancing complexity of our problems and by the "obsolete, cumbersome, illogical, wasteful, and unjust" character of the machinery with which public health work has to be carried out. The words in inverted commas are the description given by Mr. Neville Chamberlain, the Minister of Health, on May 13th of our present system of rating and valuation; but they are equally applicable to our machinery of local government, reform of which we may now reasonably hope will follow the imminent reform of the basis of valuation for local rates and for Imperial taxes.

CENTRAL HEALTH ADMINISTRATION.

The anomalies of central health administration have been greatly reduced by the Ministry of Health Act.* It is common knowledge, however, that anomalies of central administration remain which I am not concerned to consider in this address. Some of these anomalies are almost inherent in the unavoidable interlocking of different functions of government; and although I concur, for instance, in the urgent desire of Parliament, expressed most impressively in the passage of the Ministry of Health Bill through Parliament, and regret that this representative opinion was frustrated in the last stage of the Bill, I realise, as we all must, that both centrally and locally education authorities have an essential interest, *not only* in the hygiene of children, but also in their medical treatment, for the expression of which adequate opportunity must continue to be given. Similar remarks apply even more, so far as concerns the transfer of *central control* of the problems of factory hygiene and occupational disease to the Ministry of Health; and I content myself, as regards central organisation, with repeating the remark made in the volume already named:—

> "On balance one cannot doubt that there should eventually be a greater degree of central unification, while meanwhile friendly conferences are preventing friction, securing coöperation, and helping to obviate hiatuses in the health work common to several departments. This is an easy achievement when intensely parochial (intra-departmental) proclivities are kept in restraint."

But although the Ministry of Health does not deal centrally with all public health problems and is not concerned solely with these problems, its efficiency as a machine of public health government is hampered to the greatest extent by local causes of inefficiency in local government. This is no newly-realised fact. It has been painfully obvious to public health workers for a generation past, who have had with discouragement to ask, "How long? How long?" Hence, when, prior to the passing of the Ministry of Health Act, a pamphlet *issued* by the short-lived Ministry of Reconstruction made the following statements it was merely echoing this skilled knowledge.

> "*Escape from the present impasse depends upon the general reform of the system of local administration . . . . The creation of an authority (with the express function of undertaking the care of the people's health as a whole) is the object of the Ministry of Health Bill—no light undertaking—still a means to an end rather than an end in itself . . . . The difficult question of the future structure of our local health organisation . . . . is the first and most bounden duty of the Minister (of Health) to take in hand upon his creation.*"

REFORM OF LOCAL GOVERNMENT.

Looking at the problem *from* the standpoint of the different local authorities, it is stated in the same document:—

> "No proposal can be made at the present time for the extension or acquisition of powers *by any one* set of authorities without an outcry from some other set of authorities that their province is being touched upon."

The only way out is a root-and-branch reform of local government. Without this a Ministry of Health must continue relatively ineffective, and we may *profitably devote a few minutes to an enumeration* of some of the local anomalies which necessitate this *root-and-branch reform* of local government. The present occasion is particularly opportune in view of the *fact* that two Royal Commissions are now engaged in receiving evidence on the problems of local government and of health insurance administration. Although I have not had the opportunity of seeing the evidence given before either of these Commissions, its general trend *must follow* what many years of experience in administration has *rendered familiar, and* I propose *briefly to set out* three of the chief defects needing remedy and the general lines on which remedies for these three defects will need to be organised. This occasion is the more opportune in view of the recent second reading of the Ministry of Health's Rating and Valuation Bill. The passing of this Bill into law will represent the first step in the reforms which most of us desire; and its contents give hope that at least two of these reforms—namely, reduction in the number of local sanitary authorities and fusion of the work of boards of guardians with that of the larger public health authorities—will at last be secured.

The parish is an extremely interesting survival of English local history; and it had its value when each parish was almost entirely separate from other parishes. But modern life has completely changed governmental problems; and centralised supervision with some measure of control in essential matters but with liberally delegated powers to large authorities acting for wide areas has become necessary, in view of the consideration that schemes of water-supply and sewerage, of hospital and sanatorium provision, and of successful control over the problems of food-supply and of the spread of infections must hereafter be devised on a large and comprehensive scale if they are to secure the greatest degree of success with the greatest frugality of effort and expenditure

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* The stages by which this point has been reached have been outlined by me in a small volume on the Ministry of Health and Public Health Administration (G. P. Putnam's Sons).

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sions without distraction to the public interests; on the part of the sanitary authorities of paltry districts like these, local and personal considerations too often outbalance the public interest, and the multiplication of small areas is a serious obstacle to an efficient and economical settlement of problems of water-supply and sewerage in which neighbouring districts are mutually concerned."

The following statement from my evidence before the Royal Commission on the Poor Laws (Appendix, vol. ix.) shows the allocation of population in Poor-Law unions and in urban and rural sanitary districts. It may be taken as approximately applying at the present day.

"Taking the country as a whole, the average population of sanitary areas is not much more than one-third that of unions. This is owing chiefly to the number of very small urban and rural sanitary districts. Of the total 660 rural districts and 1129 urban districts 8·5 per cent. of the former and 19·9 per cent. of the latter had a population under 3000, 18·4 per cent. of the former and 39·1 per cent. of the latter had a population under 5000, 52·1 per cent. of the former and 62·2 per cent. of the latter had a population under 10,000. On the contrary, only 12·7 per cent. of the Poor-law unions had a population under 10,000. These figures need to be partially qualified for the few districts which have combined to secure the services of a medical officer of health who devotes the whole or a large part of his time to the public service. Such combined authorities do not affect materially the general view that more than half of the sanitary authorities—happily, however, representing a much smaller proportion of the population of the country—consist of units of less than 10,000 population.

"Experience has shown that, as area of administration is subdivided below certain minimum limits, so local personal interests predominate; and that, in accordance with this, a very large proportion of the smaller sanitary authorities are unworthy of their powers. Local considerations of expense and favouritism, and the insecurity of tenure of office of their sanitary officers, make efficient work an exception. A chief reason why sanitary progress has been impeded is furnished by the continued existence of these unsatisfactory small sanitary authorities. They do not as a rule obtain skilled advice, nor can they afford to obtain it when uncombined with other districts. Even when such advice is obtained, a small area of administration increases the risk of its neglect.

"In considering, therefore, the work of sanitary authorities under any improved conditions, it is indispensable that the anomalously small authorities must be combined or redistributed into units of at least the same order of magnitude as that of the large majority of the parochial unions, so that each may have within the reasonable limits of its purse the minimum staff and equipment required for efficiency."

Since the above comments were made combination of areas for the work of the medical officer of health has occurred more frequently; but this does not secure the satisfactory administration which could be obtained by complete fusion of the sanitary authorities concerned. What is required is that the number of sanitary authorities should be reduced to one-third their present number, the smaller number, outside county boroughs, being organically related to public health administration on a county scale.

In the Rating and Valuation Bill the parish is abandoned as the unit of local administration, and in consequence the number of rating authorities will be reduced from 12,882 to 648; and this raises a hopeful expectation that ere long administrative sanitary units outside county boroughs will be reduced, as suggested above, to one-third of their present number, and that the areas for Poor-Law administration will be made identical with those for public health administration. It is only by such means that an initial condition of satisfactory and economical public health administration can be fulfilled.

REFORM OF THE POOR-LAW.

This brings me to the second great reform in local administrative machinery, the accomplishment of which is already terribly belated. When separate school boards ceased to exist, and local education authorities became an integral part of the larger public health authorities, an important step was taken in the direction of securing (for in most instances) suitably large local areas that all the functions of local government should be concentrated in what is essentially a Parliament for local government, subdivided into committees for executive convenience, but the action of all these committees subject to approval by the one local authority. No sound administrative reason can be advanced for the continued exclusion of boards of guardians from this principle.

Every branch of public administration benefits by contact and exchange of views and experience with every other branch, and this is particularly true of the problems of destitution, which in very high measure imply the need for reducing the duration and gravity of disabling illness by efficient treatment and still more by the prevention of every form of preventable disease. It would take too long to set out the historic and the administrative reasons which necessitate a readjustment of local destitution work. Foremost among these, as you know, is the fact, that the work of Poor-law guardians has ceased to be chiefly the relief of the able-bodied destitute; and that now its chief work is on behalf of sick persons and of destitute women and children. In fact, destitution, in the official sense of the word, is largely a function of age, the number of persons in receipt of parochial relief at ages 0–5 being 1 in 73 of the total population at these ages, 1 in 303 at ages 15–25, 1 in 151 at ages 25–35, but increasing to 1 in 6 at ages 65–75, and 1 in 3 or 4 at ages 75 and upwards. (The figures relate to a census of paupers in England and Wales on a given day in 1906.) The age distribution of pauperism illustrates the importance of old-age pensions and of the additional provision for widows and for persons over 65 about to be made; and it gives an additional reason for redistribution of the work of relief of destitution according to its causation and character.

The needed data for reform and the directions which reform should take are adequately set out in the reports of the Royal Commission on the Poor-law issued over a dozen years ago after an inquiry lasting four years; and the more recent recommendations of the Maclean Committee issued in 1917 give the agreed conclusions of those who previously had written the partially discrepant Majority and Minority Reports of the earlier Royal Commission. The main recommendation of the Royal Commission and of the more recent Committee alike is that the boards of guardians should be abolished as separately elected bodies, and that the administrative areas should be those of counties and county boroughs, which number 111. Whether this number shall be strictly followed, or whether the areas of the new rateable districts which are proposed shall be followed is a question for detailed consideration. But if, outside county boroughs, county areas are subdivided it is most desirable that the county council should be the chief authority in the county area and that for administration both in respect of public health and destitution all local authorities should be functionally affiliated to the county council.

This does not complete the toll of desirable liaisons and affiliations. Experience in public health administration and in the provision of institutional accommodation for the mentally and bodily sick has shown that further amalgamation is needed for special purposes. Water schemes are often unnecessarily extravagant, which do not include both county and county borough populations; the same remark applies to many sewerage problems; to the difficulties of river pollution; and often even more to institutional provision for the insane, for the feeble-minded, for surgical tuberculosis, for maternity cases, for small-pox, and so on.

METHOD OF SECURING COMBINED ACTION.

To secure such combined action as has been suggested two courses, at least, are practicable: action through a combined committee, or one authority acting for the other on agreed terms, subject, in the event of differences, to the final arbitration of the Ministry of Health. *It is of the essence of such* combinations for special purposes that they should not be terminable, except by mutual consent, and with the sanction of the Ministry of Health.

When we look at the problems of our multiform local administrations and of occupational disputes we cannot boast. Let me instance a recent experience in a town not very remote from our place of meeting. This town, like so many others, had to seek for part of its water-supply outside its own borough boundaries, in this instance from deep wells with long adits bored in the chalk hills. These adits were in proximity to scattered houses and farmsteads in rural districts, whose drainage went partially into soaking cesspools. The town in question had for many years made monthly bacteriological examination of each of its five sources of water-supply, and had through its officials made inspections and inquiries, so far as was practicable, of the sanitary circumstances of all dwellings within the range of the gathering-grounds of its water-supply. In doing so there had been ascertained sources of possible contamination which it was necessary to control, and in a recent year the town council applied successfully to Parliament for power to make by-laws respecting premises outside its administration but within two miles of its pumping-stations, the enforcement of which would protect the water adits from sewage percolation. The by-laws so far as they are enforced will be expensive to the town council, and cost nothing to outside authorities or owners of property, inasmuch as the town council will be called upon to pay any expense, which would not have been necessary had the by-laws not been in force—*e.g.*, in constructing and emptying cesspools and in laying sewers uncalled for except for protection of the borough's water-supplies.

But although this was so, the councils of two administrative counties, and of five rural or urban district councils lodged petitions against this most expensive legislation—expensive not to these councils, but to the borough council which was striving for ideal safety of its water-supply. The absurdity of such action is further illustrated by the fact that the borough supplied some of the petitioning authorities with their water. Such waste of public money and such petty refusal to look at a sanitary problem from the standpoint of the persons chiefly concerned ought in this day to be impossible. True, the borough council might by chlorination of the whole of its water-supply have materially reduced the risk implied in the continued license of the inhabitants of surrounding districts to empty their cesspools into the porous chalk of the gathering-ground of the public supply of water. Such chlorination is, of course, important wherever any work of extension of wells or of adits is in progress; but to require that possible contamination of the gathering-ground shall continue, and the effects of this nastiness shall subsequently be counteracted by chemical disinfection—even though this sometimes is necessary, when safety cannot otherwise be reached—is contrary to the first principles of preventive medicine.

The above instance of lack of coöperation, of a failure of the spirit of "team-work" on which human progress so largely depends, doubtless could be matched in the experience of others.

Hospital Beds.

So far I have emphasised the need for larger units of sanitary administration in many areas, and for making the important advance towards a local Parliament for all local purposes, by transferring the work of boards of guardians to the 144 or more larger authorities. Before passing on from this last point let me bear my testimony to the value of much of the work of the guardians for the sick poor, and my expression of belief that in the prospective new conditions the guardians will be able to continue their work on a larger scale, with specialised medical institutions, in which the differences between parochial and public health patients will have disappeared, and in which the quality of their work can be greatly increased.

According to an official hospital return made in 1915, the number of hospital beds provided by different authorities in England and Wales was over 300,000, of which 15 per cent. were in voluntary hospitals, and the remaining 85 per cent. were supplied by public health and Poor-law authorities—viz., 12 per cent. of the total in hospitals for fever, small-pox, and tuberculosis, 39 per cent. in asylums for the insane and institutions for the feeble-minded, and 34 per cent. in infirmaries and workhouses. The Poor-law infirmaries have been in largest measure the refuge of patients suffering from chronic disabling and incurable illness and have thus supplied a great public necessity. I have elsewhere given reasons for the conclusion that the protracted treatment of bedridden and advanced cases of open tuberculosis in these institutions has been an extremely important factor in diminishing massive infection by tubercle bacilli, and thus in bringing about that remarkable reduction in our national death-rate from tuberculosis which is proceeding with undiminished rapidity.

But at present we have the unfortunate picture of unoccupied wards and beds in Poor-law infirmaries, and especially unoccupied lying-in wards and beds, while voluntary hospitals find it difficult to provide the accommodation sought for, and while public health authorities are providing lying-in beds and beds for advanced consumptives in special institutions, apart from the Poor-law infirmaries. For this and for many other reasons there is urgent need for the assembly of all official hospital accommodation under a single local authority, and for a closer association between official and voluntary hospital accommodation.

The consideration of the medical problems of the Poor-law and the implied conclusion that all forms of treatment of disease must be related to a national policy or prevention of disease, both undertaken by the same authority, naturally leads to a consideration of the machinery of the national system of insurance against sickness; and it is in this connexion that there emerges the third great line of advance in public health administration, which is called for in the public interest.

National Health Insurance.

I am not concerned to discuss here the defects in the National Health Insurance system except in so far as they relate to local administrative machinery though in passing I may express a regret that the system was introduced prior to the reform of the Poor-law which in 1908 had already been recommended after four years' investigation by a Royal Commission. Had the order of events been different the medical and the administrative problems of health insurance would have been less complicated, its practice more economical and efficient, and not, as at present, without the residential provision for patients which, *inter alia*, is still lacking to make the medical treatment of insured persons satisfactory.

The policy of insurance against the chief risks of life is reasonable and wise; and the community is so vitally interested in the satisfactory medical treatment and maintenance of its sick as to render it a wise precaution to contribute a large share of the expenditure needed to secure this. But as representatives of public health authorities you will scarcely need to be reminded that insurance is not prevention. Insurance against sickness, in fact, assumes the necessary continuance of sickness, and *per se* makes no provision for the reduction of sickness.

But although insurance is not an alternative to prevention, it may, when it becomes satisfactorily organised, greatly facilitate and stimulate preventive measures. The analogy of fire insurance and of insurance against motor accidents indicates one line of possible progress, additional benefits being secured by reduction of claims for sickness. The great tumbling block in the adoption of prevention as a chief plank in the policy of insurance against sickness is the fact that while medical benefit is administered by local insurance committees who alone arrange with medical practitioners for ordinary domiciliary medical attention, monetary benefits—and unhappily there is included in these the maternity benefit—are administered by the various friendly societies and limited liability companies. These are not "territorialised"—if one may coin a word—and consequently local experiences cannot be compared, with a view to obtaining accurate information of excessive sickness. Nor are they "industrialised," thus enabling occupational sickness to be studied. On the other hand, the insurance committees act for county and county borough areas; and they have no direct relation geographically and but little relation functionally to the numerous societies or companies who compete within their area for the patronage of insured persons. Equal weekly payments are made by all insured persons for very unequal risks; and though this can be defended, it is scarcely defensible that in societies in which the need for extra benefits is greatest the surplus society funds available for this purpose are at their lowest. Even if it be not immediately practicable to territorialise the administration of sickness insurance, there is urgent need for treating in this way the surplus funds of all insurance societies and companies, and for applying these surplus funds to urgent medical needs. Among these in the order of importance and urgency may be mentioned the provision of hospital beds for all insured persons who can be more satisfactorily treated in hospital than at home, consultant facilities in all cases of dubious diagnosis, the provision of a national dental service, and the subsidisation of our county and district nurses to an extent which would make them available for every case of sickness in which the "panel" doctor asks for them. Perhaps before any of these should have been put the provision of laboratory facilities for diagnosis and treatment. In the Budget of 1914 a large Treasury grant was promised for this purpose, and though the Great War prevented the adoption of this scheme—which would have included physical and chemical as well as pathological laboratory facilities not merely for insured but for all patients—we may hope that this important lack in the scientific treatment of disease will ere long be met.

The need for the application of many of the medical reforms suggested above to others than insured persons need scarcely be stressed; and in this connexion much interest attaches to schemes of medical services which in recent years have been adumbrated, and to the admirable pioneer effort, made on the initiation of Dr. Middleton Martin in Gloucestershire, to provide a correlated system of medical help for the community.

But my main intention in this address is to limit my remarks to administrative machinery. In regard to insurance against sickness, I have already indicated that the unequal distribution of surplus funds in different societies—derived like their total funds to the extent of about 60 per cent. from contributions of the State and of employers, and of only about 40 per cent. from the insured persons themselves—under present society and company administration is an effective block to a more efficient service, and especially to a uniformly efficient service. This is especially so for the maternity benefit, and I enter a special plea in regard to this share of the present sectionalised monetary administration. What possibilities of untold good, of diminished maternal mortality and invalidism, and of lowering of the toll on infant life, especially during the first month after birth, would be developed were this fund administered by county and county borough councils as part of their maternity and child welfare schemes.

The residuum of insurance administration left nominally in the hands of the local insurance committees relates to the local work of panel doctors, but owing to the necessary centralisation of this work by means of the Ministry of Health's regulations they have little to do; and they can only be revitalised by the reconstitution of these committees as integral parts of county councils and county borough councils. Whether when thus reconstituted they should function separately from the other committees of these bodies which are dealing with medical services is a subject for detailed consideration.

LINES OF REFORM.

It is evident, then, that three great lines of reform of local administrative machinery are required. I might have enlarged the list by emphasising that the larger local authorities should take a larger share than at present in industrial hygiene by indicating the need for merging the certifying factory surgeon's work in that of the local public health service, for a closer identification of the local school medical service with the public health service, where this is not already secured; and other improvements in local machinery will doubtless occur to you. But the three problems I have outlined overshadow all others; and when we have larger public health authorities, which embrace in their work the medical care of insured persons and of the destitute, the public health service will have travelled far towards that efficiency and completeness of public health administration which alone is compatible with the economy of public health and life, as contrasted with the short-sighted parsimony which refuses to pay the price of health.

Oliver-Sharpey Lectures

ON THE

INTERPRETATION OF THE ELECTROMYOGRAM.

Delivered before the Royal College of Physicians of London on May 5th, 1925,

BY E. D. ADRIAN, M.D., F.R.C.P., F.R.S.,
FELLOW AND LECTURER OF TRINITY COLLEGE, CAMBRIDGE.

LECTURE II.*

BEFORE we can say how far the recording of the electromyogram will be of real value in neurology we must answer the question which was left undecided in the previous lecture. The oscillating action currents show that during a voluntary contraction the muscle is activated from 50–250 times a second, and the point we have to settle is whether the nerve impulses recur at the same or at a much higher frequency. Given a picture of the fluctuations of current in the muscle, how are we to discover whether this picture corresponds more or less with what is happening in the motor nerve-fibres and in the motor centres of the cord? The most obvious way would be to make simultaneous records of the action currents in the motor nerve and the muscle during a reflex contraction and to see if they agree in frequency. Unfortunately, technical difficulties have stood in the way except in one or two instances. The difficulty lies in the recording of action currents from the motor nerve. When the muscle contracts reflexly in response to a single induction shock to an afferent nerve, it is possible to detect the action current in the motor nerve, though it is a great deal smaller than that produced by stimulating the motor nerve itself. Forbes[1] has shown that this small size is probably due to the fact that in the reflex the motor fibres are not all active at exactly the same moment; also there are many fibres in the nerve-trunk which do not become active at all in the reflex. The lack of synchronisation is probably a great deal worse in the usual reflex to such a stimulus as pinching the skin, and at any rate attempts to record the succession of reflex action currents in the nerve have usually failed. What evidence we have is to some extent conflicting. Veszi[2] found that during the convulsions produced by strychnine in the spinal frog, the motor nerves showed small action current oscillations at the same frequency as those in the muscle (about 40 a second). On the other hand, Athanasiu[3] describes oscillations of a much higher frequency (500–1000 per second) in the sciatic nerve of a dog during movements of progression. Forbes and Cattell[4] find nothing corresponding to this in the popliteal nerve during decerebrate rigidity although triode valve amplification was used.

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* Lecture I. appeared in The Lancet last week.

ACTION CURRENTS IN THE PHRENIC NERVE.

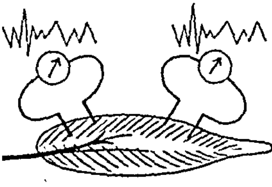
In one case, however, the evidence seems to be quite conclusive, and this is the case of the action currents in the phrenic nerve during the movements of breathing. The phrenic is an ideal nerve for this kind of investigation, as it is long, unbranched, and contains no fibres except those to and from the diaphragm. Dittler and Garten[5] found that during the movement of inspiration it was just possible to record a series of very small action currents in the phrenic with a frequency of the order of 70 a second, which corresponds closely with the frequency of the action currents in the muscle. This result was amply confirmed by Gasser and Newcomer[6] in 1921 with the aid of a valve amplifying system in conjunction with the string galvanometer. This gave an amplification of about 500 and showed the action currents in the phrenic as a series of large waves occurring in groups of 100–150 at the rate of 70–100 a second. The frequency of the responses in the phrenic corresponded very closely indeed with the frequency of the responses in the diaphragm muscle, simultaneous records of the two showing the same irregularities.

This work leaves no room for doubt that the movement of the diaphragm is brought about by a discharge of impulses at the rate of not more than 70–100 a second from the cord, and that each volley of impulses in the nerve produces a corresponding wave in the action current record of the muscle. It is noteworthy that the impulses in the different nerve-fibres must have been more or less in phase with one another to have given such definite waves as those found by Gasser and Newcomer, though the volleys of impulses are not discharged at perfectly regular intervals. No doubt the same is true of the discharge of impulses from the cord during strychnine convulsions where Veszi found definite waves in the nerve-trunk.

ACTION CURRENTS FROM DIFFERENT PARTS OF A MUSCLE.

In the case of the phrenic nerve and the diaphragm, therefore, the electromyogram gives us a valuable picture of the activity of the motor centre, since the successive impulses in the nerve-fibre do not recur too rapidly for the muscle-fibre to follow. It is arguable, of course, that the semi-automatic innervation of the diaphragm may differ from that of a skeletal muscle, the frequency of the nerve impulses being much higher for a voluntary movement than for one like breathing. There are, however, certain less direct lines of evidence for the view that in skeletal muscle, too, the frequency of the nerve impulses is no greater than that of the waves in the electromyogram. The most important is that brought forward by Bass and Trendelenburg.[7] Using two pairs of needle electrodes they led off the action currents from two distinct regions in a muscle and recorded them simultaneously with two galvanometers. They found that the waves showed a very close correspondence in the two records as long as the distance between the two pairs of electrodes did not exceed about 5–6 cm. The electrodes were so arranged that a current in the one circuit would not affect the other and that the two pairs would be in connexion with different muscle-fibres. The agreement of the waves recorded by the two strings certainly suggests that each corresponds to a volley of impulses from the motor centre (Fig. 1). It is not surprising that there is no longer an agreement when the distance between the two pairs of leads is increased to more than 5 cm. It means no more than that the whole of the motor neurones to a large muscle do not always act in complete unison. If the irregular response of the muscle had been produced by a much more rapid series (regular or irregular) of impulses in the nerve-fibres it seems unlikely that two different groups of muscle-fibres would show the same irregularities, but the experiment is not altogether conclusive, for sometimes an extremely rapid regular series of stimuli to a motor nerve (800 a second) will produce large irregular action currents in the muscle. From the size and arrangement of these it is difficult to avoid the belief that most of the muscle-fibres are responding synchronously, though why they should do so is not very clear. The chance of this occurring might be greater if the impulses in the nerve-fibres were irregularly spaced, and the irregularity of the muscle response might then be determined by this spacing without necessarily bearing much resemblance to it.

FIG. 1.

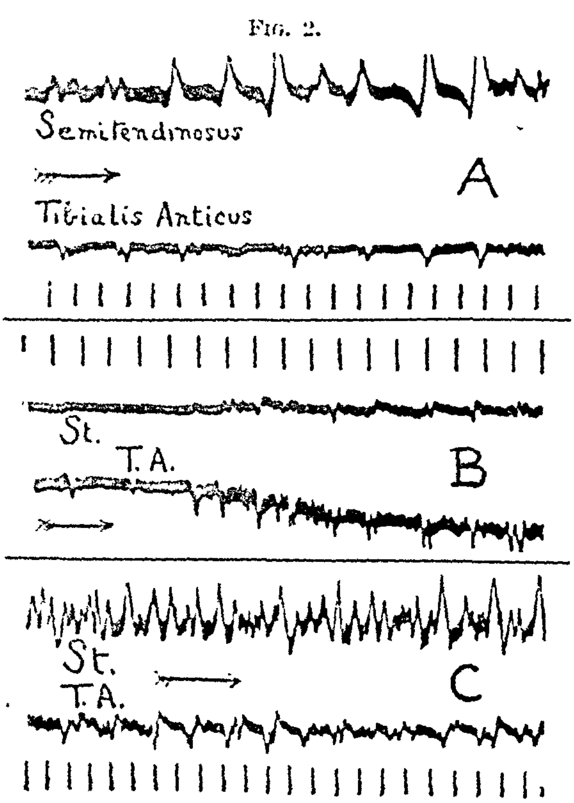


Bass and Trendelenburg made the further interesting experiment of comparing the action currents in the right and left temporal muscles. Although these act together as a rule, they found that there was no correspondence in the two electromyograms. Taken in conjunction with their evidence of correspondence in two regions of one muscle this can only mean that the volleys of impulses from the right and left motor nuclei are not identical. In the case of the diaphragm, on the other hand, Gasser and Newcomer found corresponding waves in the two phrenic nerves, so that here both motor centres must act in unison. I have occasionally found a close correspondence in the action currents of two synergic muscles contracting together in a reflex. Fig. 2, A and B, shows two records of this kind taken from the semi-tendinosus and tibialis anticus of a spinal (decapitated) cat during the flexion reflex. The reflex was produced by pinching the foot, and the movement was jerky and intermittent. The electromyogram consists of discrete waves or small groups of waves at a low frequency with definite pauses between them, and the waves in the two muscles agree fairly closely. The agreement comes to an end as soon as the contraction becomes continuous (Fig. 2, C). The same kind of agreement is found in the groups of electric responses which occur during a strychnine convulsion in the two muscles. Evidently the spinal centres must discharge nearly simultaneously to produce these identical waves, but it is quite possible that the discharge consists of a very rapid series of impulses in each nerve-fibre, the muscle responding only once or twice to each series.

EVIDENCE FOR HIGH FREQUENCY IN NERVE.

So far the evidence has been in favour of the view that each wave in the electromyogram can be taken to represent a volley of impulses from some of the spinal motor neurones. In the one case of the phrenic the evidence is conclusive. There are two observations which seem to favour the opposite view—that the nerve impulses recur much faster than the waves in the electromyogram. One is the undoubted fact, shown by Forbes and Rappleye,[8] that cooling the muscle decreases the frequency of the waves in the electromyogram. As the cooling has not affected the central nervous system it appears that the frequency of the electromyogram depends on the state of the muscle and is not determined entirely by the rate of spinal discharge. This conclusion would be inevitable if the cooling could be strictly confined to the effector organ, the muscle, but an element of doubt comes from the fact that the sense organs and sensory nerve-fibres in the muscle are cooled too, so that both ends of the proprioceptor arc have been interfered with. Dusser de Barenne[9] finds that the frequency of the electromyogram is reduced by injecting novocaine in doses sufficient to interfere with muscle sensation but not with voluntary power, and the reduction in the cooled muscle may also depend on a partial failure of the proprioceptor supply. In the absence of exact measurements of the temperature within the muscle and of the sensibility of the muscles and joints, it is difficult to say whether the cooled muscle really behaves as it does because it is ataxic, but Miss Cooper and I[10] have investigated the parallel case of the reflex movements of spinal animals, and we found that a very considerable temperature reduction was necessary before there was any change in the electromyogram frequency.

FIG. 2.



A and B, simultaneous records from the semitendinosus and tibialis anticus during the flexion reflex in a spinal cat. Reflex evoked by pinching the foot. The records show synchronous waves in the two muscles. Time marker records 1/50 sec. intervals. C, Reflex fully developed. The waves do not now agree.

The temperature effect is not conclusive therefore. The other line of evidence is that brought forward by Athanasiu, and it depends on the observation of very rapid oscillations in the records taken from motor nerve-trunks during reflex movements. This again is not altogether conclusive, for Athanasiu finds much the same small, rapid oscillations in the record from the muscle. He regards these as due to the intramuscular nerve-trunks, but Forbes has pointed out that this interpretation is quite untenable, since the action currents of the intramuscular nerves would be far too small to affect a galvanometer leading off from the muscle.

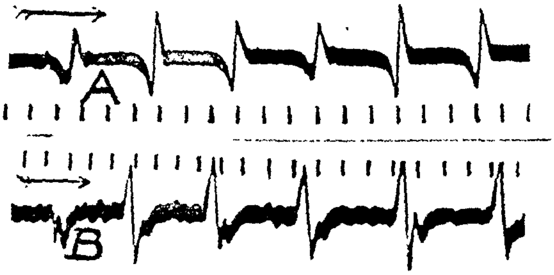
It is to be hoped that the whole question may be cleared up before long by an extension of what we may call the Gasser and Newcomer experiment to other [illegible] than the phrenic and other movements than [illegible]. Meanwhile, however, we have a [illegible] that each of the larger waves in the electromyogram is produced by a volley of impulses from the motor centre in the cord, and that the appearance of a fairly regular succession of large waves (as in a maximal voluntary contraction) implies a fairly regular succession of volleys, the motor centre "beating" as a whole with only a few neurones out of phase with the majority.

EFFECTS OF RHYTHMIC STIMULATION.

A rhythmic discharge of this kind might have two possible explanations. It might depend on the natural period of the spinal motor neurones themselves, or it might be due to a rhythmic sequence of impulses arriving at the spinal motor centre from some other part of the nervous system. Now Sherrington has pointed out that the final common path of several reflex arcs should be aperiodic, since it must take part in many different types of response. But in this sense "aperiodic" means only that the final common path should have no period of its own measured in seconds or minutes; periodicities as short as 1/50 or 1/100 second are quite another matter and the argument does not profess to take them into account. The trend of recent work, starting with that of Beritoff, has been to show that the spinal motor neurones are not limited to one definite frequency. They can certainly be made to discharge at many different frequencies up to and over 100 a second if a rhythmic sequence of impulses reaches them.

If the flexion reflex is produced in a spinal cat by pinching the foot, the electromyogram shows the usual irregular oscillations at the usual frequency, but if instead of a "natural" stimulus such as pinching we use an electric shock repeated regularly, then the response bears very clear indications of the frequency of the stimuli. The relation of the response frequency to the stimulus frequency in different reflexes and in different conditions of the central nervous system has been very fully investigated by Liddell and Sherrington[11] using the mechanical response of the muscle recorded with a high-period isometric lever, and Miss Cooper and I[12] have found much the same results with the electric response. These experiments show that in certain reflexes, of which the flexion reflex in the spinal animal is a typical example, the response is very closely related to the stimulus, almost as closely as it is in a muscle and nerve preparation. The contraction attains its maximum almost at once and does not persist for more than a few seconds after the stimulus has ceased. The plateau of the contraction shows well-marked notches corresponding in frequency to that of the stimuli, and the electric response consists of a series of large action currents at the same frequency. The agreement only fails when the stimulus frequency is raised to 250–300 a second. If the stimuli are weak and the response poor (as in an animal suffering from loss of blood), the electromyogram consists of nothing but the large "primary" waves corresponding with the stimuli. With stronger stimuli, or in more active preparations, the intervals between them may be filled in with a number of small "secondary" waves (Figs. 3 and 4). If, instead of

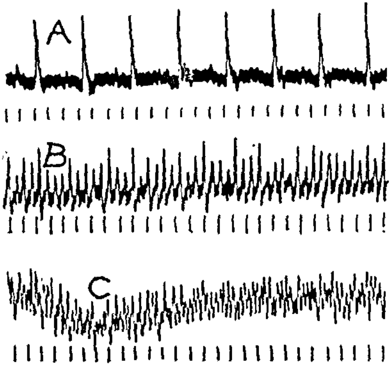
FIG. 3.



Flexion reflex in spinal cat evoked by rhythmic stimuli (induction shocks to the popliteal nerve). Response of tibialis anticus. A, Weak stimuli, about 13 a sec.; response consists of primary waves only. B, Stronger stimuli; secondary waves as well as primary.

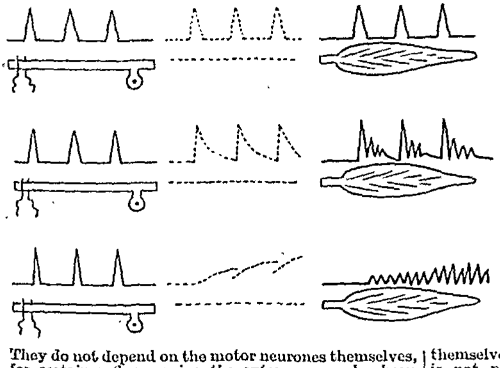
flexion, we record the crossed extension reflex, the time-relations of the response are quite different. Liddell and Sherrington find that the contraction rises slowly to a plateau and may remain long after the stimulus has ceased. The electric response may show primary waves when the stimulus frequency is low, but there is often no sign of them, the record consisting of a rapid, irregular succession of small waves (Fig. 5). Sherrington classifies a reflex of this kind as of the "Recruitment" type in view of the gradual, instead of abrupt, increase in the strength of contraction, and he points out that the response shows what may be well compared with mechanical *inertia* in its slow development and *momentum* in its tendency to outlast the stimulus. The different types of response preserve their character in spite of the division of the sensory fibres which arise in the muscles themselves, so that the differences evidently depend on the central connexions of the various arcs.

FIG. 4.



Flexion reflex in spinal cat with rhythmic stimulation. More excitable preparation than that in Fig. 3. Frequency of stimuli in A 17 a sec., in B 90 a sec., in C 160 a sec. The response shows primary waves at the same frequency.

FIG. 6.



They do not depend on the motor neurones themselves, for certain reflexes using the extensor muscles have as little inertia and after-discharge as the flexion reflex.

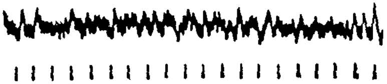
Though diagrams have a dangerous simplicity, that shown in Fig. 6 may help to explain matters. This diagram represents each volley of afferent impulses as calling up an unspecified "central process," which in its turn determines the response of the motor neurones. According as the time-relations of the central process are abrupt or gradual we shall have a reflex of Sherrington's "*type d'emblée*" or of the recruitment type. But even when it is of the latter type, where the response does not follow the rhythm of the stimulus, there is still no indication of a definite periodicity in the central process or in the motor neurones, for the small waves have no definite frequency.

So far, then, we have no evidence of a natural period in the motor neurones. But in the last analysis it is clear that the motor neurone does have a period of its own, for the nerve-fibre enters into the usual refractory state after an impulse has passed down it, and this limits the maximum frequency of response in the nerve to about 1000 a second. There is some evidence that the refractory period of the central part of a reflex arc may be longer than this, nearer 1/300 second, for it seems to be impossible to get rhythmic discharges from the cord at a higher frequency than this.[13] But the evidence for this is, perhaps, not conclusive. In any case these very short time intervals are a long way from the 50 a second rhythm of the voluntary contraction, and yet the rhythm in the latter may be almost as definite as the rhythm in a reflex produced by stimuli at 50 a second to the afferent nerve.

NATURAL FREQUENCY OF MOTOR NEURONES.

One possibility which must be considered is that the nerve cells have a natural tendency to discharge at 50 a second, and yet are able to discharge much more rapidly when afferent impulses reach them at a higher frequency. The heart may be taken as a parallel case, for here the frequency of the normal beat is a good deal less than the maximum frequency at which the heart can be driven. The strongest argument in support of this view of an intrinsic frequency in the motor neurones comes from some recent experiments, as yet unpublished, which Dr. Dusser de Barenne has kindly allowed me to quote. Working with Dr. Brevée, he has investigated the effect of local application of novocaine to the exposed cord isolated from the brain. If a reflex movement is produced by touching the dorsum of the exposed cord, before the use of novocaine the usual very irregular electromyogram is recorded. Novocaine is now applied to the dorsum of the cord, so that, as it penetrates, more and more of the nervous structures will be thrown out of action. The result is that the electromyogram becomes progressively more and more regular, and finally, just before the movements cease to be produced by touching the cord, the response shows an extremely regular rhythm of about 50 a second. At this stage we may imagine that most or all of the afferent structures are out of action and the stimulus takes effect directly on the anterior horn cells (which succumb themselves very soon afterwards). The stimulus is not periodic, but the motor cells respond with their natural rhythm of 50 a second. Since there can be no question here of a rhythmic excitation of the motor cells by afferent impulses, it is difficult to avoid the conclusion that the period is that of the

FIG. 5.



Crossed extension reflex. Decerebrate cat. Response of quadriceps extensor. Stimulation at 30 a sec., but no evidence of waves at this frequency in the record.

cells themselves and that they are so connected that they discharge in unison.

EFFECT OF AFFERENT IMPULSES ARISING IN THE MUSCLES.

There is, however, another very important group of experiments which shows that periodic afferent impulses may have a considerable effect on the frequency of the voluntary electromyogram, just as they do in the flexion reflex. These experiments have been carried out by Hoffmann[14] and Preisendorfer, and they are concerned with the relation of the tendon reflexes (Eigenreflexe) to the rhythm of the contraction. If the proprioceptors of a muscle are stimulated by making the muscle contract suddenly by an electrical stimulus, or by a sudden mechanical jerk, there is usually the answering reflex twitch of which the familiar tendon jerk is the typical example. If the stimulus is rapidly repeated, the reflex effect is also repeated at the same frequency (up to 100 a second or more), but in an uncontracted muscle the reflexes may be extremely small or absent altogether. If, now, a voluntary contraction of the muscle is produced during such repeated stimulation of the sensory endings in the muscle, the electromyogram does not show the usual irregularity. Instead it consists of a series of large waves having the frequency of the stimuli with very small irregular waves between them. In fact, the record is now little more than a series of greatly augmented proprioceptor reflexes. The cortical effect has been to make the anterior horn cells respond much more readily to the periodic afferent impulses which formerly produced only a very slight response.

It seems, then, that the cortical influence by itself can have very little tendency to determine any particular frequency of discharge from the motor neurones, for these are free to pick up whatever frequency happens to be reaching them from the proprioceptor paths. It is possible that a regular frequency of discharge might arise whenever the natural period of mechanical vibration of the muscle happened to coincide with the latent period of the reflex. The contraction would then consist of a series of twitches, each one stimulating the proprioceptor endings and so evoking the next—the whole process being something like an ankle clonus on a much finer scale. The rhythm would then be determined by the time taken between the stimulus and the reflex response, and it is true that in several cases this is of the order of 1/50 second. But in some (particularly those from the arm muscles) it is a good deal shorter, and Hoffmann very wisely refuses to theorise as to the precise relation of the proprioceptor reflexes to the normal voluntary contraction.

EFFECT OF OTHER AFFERENT IMPULSES.

It might seem likely that other afferent impulses besides those arising in the muscles might have an effect on the frequency of discharge from the motor cells. As we have seen, in the flexion reflex of the spinal cat a rhythmic stimulus to the skin or to any of the sensory nerve trunks leads to a response in which the stimulus frequency is clearly marked, and possibly the same result might be given in a baby or in an adult with complete division of the cord. In the normal adult, however, a painful stimulus to the foot does not produce a flexion reflex, and in the movements which do occur there is no evidence of the stimulus frequency. In my own case, at least, a stimulus strong enough to be extremely painful will generally force me to contract most of the leg muscles, but there seems to be no tendency to a definite movement of flexion or, indeed, to any fixed response. If the stimulus is a rhythmic series of induction shocks, the electromyogram from the tibialis anticus or the calf muscles shows nothing more than the usual irregular oscillations and differs in no way from the electromyogram of an ordinary voluntary contraction.

This would agree with Hoffmann's contention that the [illegible] Eigenreflexe are in a class by themselves in that there is a much closer connexion between afferent and efferent neurones than there is in other kinds of reflex arc. This is suggested by the very short latent period, the absence of anything in the nature of momentum, inertia or fatigue, the absence of any change with strychnine, &c. Hoffmann's work shows that in man, with the brain in full control, the spinal motor neurones are directly accessible to the afferent impulses from the muscle; it is clear that they are much less accessible to impulses from the pain-fibres, although the connexion is close enough in the spinal animal with the brain destroyed.

We have, then, two possible factors which may help to determine the frequency of the electromyogram. One is a natural tendency of the spinal motor neurones to discharge at 50 a second when their excitability is raised by the cortical effect and they are not furnished with a ready-made frequency. The other is the tendency of the motor neurones to be influenced by afferent impulses from the contracting muscle itself—impulses which might well have a definite frequency determined by the mechanical properties of the muscle.

I have said little or nothing in all this about the application of the electromyogram to the problems of clinical neurology, but I have probably said quite enough to show that the interpretation of the curves is still far too uncertain for them to give much definite information. But I hope it has appeared that its investigation in movements of all kinds, normal and abnormal, may help enormously towards a real understanding of the electromyogram, and I hope it has appeared that such an understanding is well worth reaching.

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THE PROBLEM OF MALIGNANCY

FROM A PURELY RADIOLOGICAL STANDPOINT.

A paper read before the American Medical Association at Atlantic City, May 27th, 1925,

BY A. E. BARCLAY, O.B.E., M.D., D.M.R.E. CAMB.,
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"By Doubting we come to Truth."—*Cicero.*

"Who never doubted, never half believed,
Where doubt, there Truth is."—*P. J. Bailey.*

THE history of medicine during the last century is one of the great romances of the world, corresponding to that wonderful epoch in history when Columbus set forth on his voyage of discovery and the Portuguese, rounding the Cape of Good Hope, found their way to India and the East.

As in the sixteenth century, so to-day in medicine, whole new worlds have been opened up by those who, using the microscope and laboratory methods as their vessel of discovery, have navigated and charted the new worlds of science. Once more, as when the Spanish and Portuguese divided the known and unknown world between them, there is a dividing line, imaginary, no doubt, and on the one side we have the possessions and observations of the old order of naked-eye or macroscopic observation, and on the other the accurately mapped new fields that have fallen to the microscope. The mass of microscopic discovery has added so greatly to the sum of medical knowledge that to-day it is a human impossibility to master the whole of it, while the older macroscopic knowledge and observation have, by comparison, been almost eclipsed. Yet, with all the advances, there is one problem on which even the microscope seems to shed no new light—i.e., the cause of cancer—for in spite of all the world-wide research and the voluminous writings on the subject, the artificial production of growths in animals and plants, yet we know practically nothing more than our fathers as to the nature of human cancer.

New Type of Radiations.

In these last 29 years, however, a new light has crept in on this dread and growing scourge (300 per cent. increase in the last 70 years), one which has not, I think, received the consideration it should have done, especially from the microscopic point of view. Investigators of the problems of disease are all looking to the microscope to aid them in discovery, and the new type of radiations do not fall within its field of vision. In the case of cancer the eyes of all radiologists have been turned on the definite but elusive curative effects of the new rays and, may be, we have neglected to note "the writing on the wall" as we pushed onwards with more and more powerful radiations in our search for the *cure* of the disease. It always seemed that just round the corner lay the cure and increase of the penetration or quantity of the radiations applied would make all the difference. True, we have been disappointed, but it has made our outlook always tend towards maximum rather than minimum doses of this powerful agency—i.e., we have latterly tended to use radiation as a destructive rather than as a medicinal agency. We have written of our successes and failures in treatment, and of the tantalising uncertainty of our results, and we have recorded the radiographic appearance of cancer, but have we stopped to take stock and think what these things mean? Have we turned to examine our observations from the point of view of the nature of the disease, quite apart from any thought of the cure? Or have we *also* been content to take it for granted that the microscope, and the microscope only, is the chosen vessel of discovery? When Columbus saw the failure of the Portuguese navigators in their search for the Indies, he decided to set sail in the opposite direction on his voyage of discovery, for it was obvious that the fabled Indies must lie somewhere. So, in like manner, I invite you to look in the opposite direction, to forsake the microscope and the assumption of its omnipotence, and to consider a variety of radiological and clinical observations for which I claim no originality or expert knowledge on the subject, and which are of the older microscopic school.

Under X ray and radium treatment the cure, or arrest of the progress, of some malignant growths is a definite fact, and we know with certainty that we have applied some factor which has altered the normal course of events. Many of the observations, however, are matters that are not capable of scientific proof, but are commonly accepted by those who practise radiation therapy. Others again are matters of surmise only, resting on no definite scientific data, in which, from long experience, one has a definite impression, a clinical sense, which may or may not be shared by others.

X Rays in Cancer: Contradictory Results.

Under the generic term "cancer" we include a number of diseases that are characterised by cell overgrowth, and that normally end in the death of the patient. The two great groups of the carcinomata and sarcomata are subdivided, by the microscope, into a number of less clearly defined varieties, but in the natural course of events they all carry the one definite common factor, death, as their ultimate termination. Some are rapid in their course, others less so. Some tend to extend locally only, others to rapid dissemination, and generally speaking the microscopic examination of the type of cell will give an indication of the prognosis. Yet every surgeon and every radiologist occasionally meets with an apparently hopeless growth that melts away as if by magic, while an exactly similar case, microscopically and macroscopically, runs its course entirely uninfluenced by the same treatment. In the early days of radium Wickham recorded the apparent cure of a carcinoma of the uterus with what would now be regarded as a futile dose, and almost every early worker with X rays had occasional incomprehensible and cheering results of the same order.

At the present time Wintz, quoting figures of his uterine and cervix cancer "cures," states that "in spite of the best technique, most favourable conditions and good general health of the patient, the results are from time to time inexplicable." He states that from 15 per cent. to 20 per cent. of absolute failures occur even in the cases in which his past experience would lead him to expect a successful result. Observers are generally agreed that, as a class, the malignant growths of the cervix are those which are most likely to yield a fair proportion of satisfactory results. The reason for this probably lies in the fact that in post-mortem examination it is found that 55 per cent. of these gynæcological cases show entire freedom from metastases, whereas breast cancer yields only 3·2 per cent. freedom from metastases in the post-mortem records (Lazarus-Barlow).

There are, however, evidently different types, histologically identical, at the one end of the scale those easily influenced by radiations, at the other those that are quite intractable—i.e., a radio-sensitive and a radio-insensitive type. Since all living tissues can be killed by destructive doses of radiations, all growths are classed as radio-insensitive which have the same or a greater degree of radio-tolerance than the surrounding normal structures.

The problem of malignancy as seen by the radiologist is full of contradictions, and it is clear that neither the clinical character nor the cell form of the constituents, although usually reliable, are the definite criterion as to the real nature of a tumour. For want of a better classification we must, therefore, still give the same name to histologically identical growths, although some of them disappear under radiations while others persistently extend and recur, regardless of all the wiles of the radiologist; one cannot help feeling that there is some fundamental difference in the two, and that this difference is not expressed in the cells that are seen under the microscope. The one is a radio-sensitive and the other a radio-insensitive tumour. As yet the only means of determining the identity of each is by watching the effect of radiation treatment—an agency that may be applied in homœopathic, medicinal or such destructive doses that they "cure the disease and kill the patient."

Illustrative Cases.

Certain cases are landmarks in every medical man's experience, and the following are the only cases I shall mention in detail, for it is my purpose, as far as possible, to view things from such a distance that detail is lost. The first case was not labelled as one of the regular types of malignant disease, but out of it arose the train of thought which is embodied in this present paper.

In 1910 a healthy boy of 15, an only child, came with large masses of glands in the left groin and right side of the neck, and smaller masses elsewhere. The spleen also was slightly enlarged and it was diagnosed as a case of acute lymphadenoma, but it is just possible that it was a case of Mikulicz's disease. No changes were found in the blood at any time except slight secondary anæmia. He was treated with X rays and the glands disappeared. He went away to the hills but was back in a fortnight, gasping for breath, and with large masses in the mediastinum. These also quickly disappeared, but the boy, though apparently well again, was kept under observation and frequent treatment. Glands appeared from time to time in all the usual sites but were always easily disposed of.

There was some swelling of the hands and feet and these became exceedingly painful. Radiographs showed definite changes in the bones of one of the hands, and these I shall refer to later. X ray treatment cured the pain and swelling completely and he could dress himself and use ordinary tools. But gradually the boy lost strength in spite of the fact that every gland disappeared under treatment almost as soon as it was detected. Hundreds of lymphoid nodules appeared in the skin of the back and in other situations, some breaking down and *forming* ulcers about ¾ inch in diameter, and these also yielded to the magic. When only a portable coil and accumulators were available even the masses in deep situations yielded. Yet all the time the weakness and slight cachexia increased, and after 15 months of the toughest medical fight I ever had he died from exhaustion. It was one of the most disheartening cases imaginable, for the faith of the parents and son was kept up the whole time by the effects of the rays, and yet to the onlooker it *was obvious that it was only* the glands and nodules, the symptoms, the accidental factors, that were influenced. There was evidently some underlying cause at work that we were not touching at all by our radiations. In this case, at any rate, it was perfectly clear that there was a definitely *malignant disease at work, of which the lymphoid overgrowths* were but a symptom. Without X rays the glands would have brought death, accidental, as I term it, in a few weeks; but with treatment the accidental death was averted and we had the picture of the underlying malignant disease *running its slow and certain* course, unaffected in any way by the rays. The outstanding impression on my mind was the fact of an underlying *malignant disease* which was giving rise to enormous overgrowth of all lymphatic tissue, these overgrowths being practically malignant growths, although they did not tend to invade surrounding structures.

And then on the other side of the picture are two very early private cases, clinically almost identical so far as one could see, in which the diagnosis was retroperitoneal sarcoma originating in the suprarenals.

In one case, a boy of 9 months, no operation was performed. In the other, a girl of 15 months, the late Prof. G. A. Wright explored, found a typical sarcomatous mass that was friable and almost breaking down, and which he did not attempt to remove. Both these infants were irradiated with such apparatus as we had in those days—at the most the tubes would not stand more than half a milliampère at perhaps a 3-inch to 4-inch spark gap. There were no filters except a layer of felt, and the skin was hardly bronzed. Yet both these children recovered completely and are now normal healthy young adults. What had wrought this change? I know not, but it was *quite certain that these* malignant growths were affected by something, presumably the rays, in spite of the fact that so little could have reached the required depth. And the impress of these two cases on my mind was that of a locally *malignant growth*, fortunately of an unusually radio-sensitive type, in which the *originating* cause had disappeared.

From these isolated and rather unusual cases, therefore, I came to looking at cancer cases in a different light. It occurred to me that perhaps a *malignant growth* might be originated by a *malignant causative disease* and that these two elements might exist concurrently, or that the malignant causative disease, having started the malignant cell *overgrowth*, might die out, leaving the malignant growth to accomplish the death of the patient, but thwarted in the case of these two infants by the fact that the growth was particularly radio-sensitive and that there were no untreated metastases.

There is one, and only one, certain proof of malignancy—i.e., the death of the patient—for neither the clinical nor the microscopic characters of the cells are infallible evidence of malignancy. If a patient recovers from what was clinically and microscopically a malignant growth, we write it down as either a miracle or that the diagnosis was wrong. One man put it that the radiologists' successes in cancer were the clinicians' failures in diagnosis, but this is far too sweeping and is not justified by experience, for these miracles are too frequent and too dramatic to be interpreted in this way. If the patient recovers, however, we can never say with certainty that he had been suffering from a malignant disease, for death is the one and only infallible proof that the growths that we have been watching or treating are malignant ones. No clinical and no microscopic evidence is infallible. Microscopic malignant cell form and malignancy are not necessarily synonymous terms.

Different Causes of Death.

Death is the natural end-result, the one common factor, but the manner in which life is extinguished differs very widely and calls for more than passing consideration.

The first and far the commonest cause of death is that some vital organ is invaded by the direct extension of the primary growth or its metastases. This form of death is accidental and not an essential part of the malignant disease, for it is something approaching pure chance whether the growth attacks a vital part early or late. A very malignant type of growth in one part of the body may take a long time to kill the patient if situated in some less vital spot. One could, in fact, imagine a growth extending almost without limit, provided it maintained its blood-supply, *if it did not invade* a vital organ.

Secondly, there is death from septic infection with its resulting absorption, its cachexia, debility, and gradual wasting. This again is not an essential part of the malignant disease, although death supervenes. Within the body this source of danger to life is still only too common, but, thanks to X rays, we see less and less of this type of death from external ulceration, with its festering and fœtid ulcers.

The third and much more unusual type of death suggests that as in my lymphadenoma case there is another factor, one of which I have no proof, but of which I am fully convinced. We see some devitalising process at work and we usually attribute it to the effects of undiscovered secondary deposits, but in many cases I feel certain that it is largely the manifestation of an underlying malignant disease which unfailingly results in the gradual weakening of the patient, with cachexia, loss of energy and strength, and which ends inevitably in the death of exhaustion. Whenever we see a cancer patient with cachexia, apart from septic absorption, we know that, no matter whether the mass responds or does not respond to X rays, the patient will steadily go downhill and die, and in the terminal stages the temperature will rise, quite apart from the presence of any sepsis. This, to my mind, is the manifestation of the working of the true malignant disease. Provided the patient lives long enough this process is seen in varying degrees of intensity, but is always subject to the intervention of death from one of the intercurrent or "accidental" causes—invasion of vital organs or sepsis. It is seldom, if ever, seen in rodent ulcer, but its presence is often suggested in those forms of malignant disease of slow growth in which metastases are not attacking vital organs, and it gives one the impression that the ordinary causes of death in these diseases (extension and sepsis) are not only accidental, but that many of these growths are only an incident or accident in an underlying malignant disease. In order to save repetition I will call this hypothetical and entirely unknown quantity, this essential underlying malignant process, x, and I may as well say at once that I believe it will eventually be found in the blood, that it may disappear after originating the growth, and also that it may vary widely in intensity, quite apart from the type of growth it evokes.

The Unknown Quantity.

I believe that this x occurs in every case of true malignant growth, and yet, how can one explain the fact that certain cases are cured by surgery or by radiations, while others persist and spread, either directly or by metastases, in spite of all we can do? Think of a case of a rodent ulcer that fails to respond. The patient often remains in perfect health until sepsis or extensions slowly end the scene. It is a purely local disease and there seems to be no x in the case at all. It is merely a locally malignant disease and one which, mercifully, is usually radio-sensitive. It does not even tend to extend by metastases but only by direct spread. If x was ever present in the case, it has disappeared.

Now look at the type of breast growth in which all the conditions seem to be particularly favourable for operation, so far as the surgeon can tell. In some of these a recurrence comes in or about the scar, which may respond perfectly to comparatively *mild X ray treatment, and we see an apparent local cure.* Unfortunately, however, there are only too often secondary deposits elsewhere that we cannot detect, and these are usually the "accidental" cause of death, and yet one feels practically certain that if *these patients had been irradiated early enough* there would have been no metastases and we should have obtained an actual cure, as we actually do in a considerable number of such cases. Occasionally one has the good fortune to treat a case of this type that *is not complicated by operation. I see a woman* from time to time who five years ago had a large and typical inoperable scirrhus with extensive glands both in the axilla and above the clavicle, and yet to-day the patient is in perfect health, and there is not a *sign of any previous disease in the breast. In another* case the breast became almost normal under radiations in the period of waiting for a bed in the hospital. The obvious thing to say, of course, is that the diagnosis was wrong, but a large number of what *must have been similar cases, in which the surgeon* states that he has been able to remove only a portion of the growth, are alive and well to this day. The cases are far too numerous to be accounted for by throwing doubt on the diagnosis of the clinician and *microscopist. I interpret these very encouraging* results by thinking of them as of only local malignancy, apart from metastatic spread. They happen to be radio-sensitive and we obtain an apparent cure; the cause, the x that originated the growth, has disappeared, *and if the growth is completely eliminated* by operation or by radiations or by a combination of the two an actual cure is effected.

Then one thinks of other radio-sensitive cases in which although recurrences disappear under the *rays, others come up, and often we are also successful* in dealing with these as they occur—the cause, the x, is still at work and sooner or later death comes, usually by internal deposits in vital organs and sometimes accompanied by the cachexia, &c., that is *associated in my mind with* x.

Radio-insensitive Cases.

But among those cases that seem to offer every prospect of success, and which are irradiated at the earliest possible moment after operation, there are some in which growths appear in or about the scar *and which are quite uninfluenced by the rays*—i.e., radio-insensitive. They spread by direct extension in spite of all we can do. Occasionally a change in the type of radiation raises our hopes for a time, but, nevertheless, death comes, generally by metastases. And yet, this absolutely uncontrollable, radio-insensitive disease seems to differ in no outward or microscopic characteristic from the other type which is radio-sensitive and which, apart from *metastases, seems to promise such good results.*

In many of these breast cases, however, in addition to the growth there seems to be some other factor at work. The tumour itself may have the same clinical and microscopic appearance as those in which we have *obtained apparent cure, and it may or may not* respond locally to radiation; but no matter what we do, there is the gradual wasting associated with cachexia which is, to my mind, evidence of the true underlying malignant disease, which when once established never seems to falter in its course, but unfailingly brings death no matter what happens to the growths, the cell overgrowth that takes place in its presence. The patient gets weaker and weaker, develops a temperature, and eventually dies from exhaustion, occasionally with so little of the cancerous growth itself that it looks very doubtful if the tumour could have been the cause of death. In its course it resembles a case of pernicious anæmia, complicated by a growth.

In some of the breast cases one can trace the same course of events as in the lymphadenoma boy, but less accurately and in a much more complex picture that is distorted and obscured by the malignant tumour and its symptoms. Sometimes one gets a *clear impression of the underlying cause at work if* the growth happens to be radio-sensitive, and we note the progressive weakness, which we usually ascribe to internal secondary deposits. I suggest, however, that, in part at least, it may be put down to the continued *action of my hypothetical* x.

I have chosen to speak in terms of those types of cancer which are most common and most easily observed, but my general impression of growths in other situations is on the same lines—i.e., that there are two distinct types clearly differentiated by the *manner in which they do or do not respond to* radiation. Some are much more susceptible than others in their reaction as well as by reason of their accessibility, but underlying and at the back of all of these there is a malignant causative disease, which *may or may not persist after it has done the deadly* work of initiating the growth.

In the radio-sensitive type we may hope for complete success if we can locate and heal the primary focus and its metastases, only if this underlying factor has disappeared, but if x is still at work, *even in a very mild form, we shall not succeed in the* end, for sooner or later recurrences, even if they are of radio-sensitive type, will come where we cannot detect them, and death follows. In the radio-insensitive type we can do nothing but watch the progress of *the growth and its metastases. When* x *is not* at work one has seen these tumours pursuing their tragic course for a year or more, with comparatively little, if any, lowering of the patient's vitality, till nerves are involved, when pain and loss of sleep undermine *the patient's strength. The end in such cases is often* pathetic, and it is a merciful release when, at last, some vital organ is put out of action.

In those cases which I suggest are due to the persistence of the true malignant cause, x, the *picture, if we can eliminate the obsessing factor of* the growth itself and its symptoms from our minds, is one of increasing debility, of the type of pernicious anæmia, and it is this disease which I would suggest to your minds as the simile of the underlying malignant *disease. This fatal type of blood change is not asso*ciated with cell overgrowth, but you all know how frequently a case diagnosed as pernicious anæmia turns out in the end to be "due" to an internal growth. I suggest that in these cases of mistaken diagnosis we may have been confusing cause and effect, and it is possible that some of the cases of so-called pernicious anæmia are the uncomplicated action of my hypothetical x.

Is X a Blood Condition?

I suspect that this x is a blood condition, possibly a very delicate biochemical change that has a selective stimulating action on the growth of *certain types of cell under favourable conditions,* the type of cell affected depending on the nature of the biochemical change. Of the conditions we know nothing, but if one might indulge in pure speculation for a moment one might accept x as a temporary or permanent blood condition, very slight changes determining whether its action should influence one or other of the different types of cell to cancerous growth. Suppose that at the time this slight blood *indisposition occurred there was irritation of, say,* the breast cells by some course, it might stimulate these cells to disordered overgrowth, forming a malignant tumour that would normally run its fatal course, while the underlying malignant disease, the blood change, entirely disappeared. The patient is operated on and there is a "cure." One could imagine the same sequence of events occurring again after many years, and surely this is a more reasonable explanation than to think of malignant cells lying dormant for perhaps as long as 20 years.

Or we may suppose that the malignant disease in the blood gets a strong hold, and no matter what treatment the growths receive as they appear the cause will still be at work, stimulating other groups of cells of the same type into activity, for its selective action is most definite. At the same time each of these growths is capable of dissemination in the various well-recognised ways, and before the malignant disease makes its presence known as a separate entity the growth has completely filled the picture. Suppose, however, x does not find any injured cells on which to act, or maybe the blood change does not happen to be one that affects any particular type of cell until very late, then we get the picture of the cases that approximate to pernicious anaemia.

This, of course, is all pure fantasy and put down simply to give more concrete form to my rather nebulous ideas as to the nature of x. It is, however, a most remarkable fact that a patient seldom suffers from two types of cell overgrowth at the same time. Scirrhus of the breast and similar types of growth elsewhere, colloid, columnar, squamous, round or spindle-celled overgrowth, many are the types, but only one type as a rule in one patient.

In the boy who forms the subject of my text the malignant disease disordered the reproduction of the lymphoid cells first in one region then in another, and later on practically universally, but never any other type of cell. Because these happened to be radio-sensitive we could watch the almost undisturbed progress of the malignant disease itself. In breast cancer it is only too common an occurrence to find the other breast affected, and with a cellular formation that is identical with the first growth.

A Reasonable Hypothesis.

Thanks to our teaching we are so taken up with the idea that all secondary manifestations arise from the one primary growth, and that the cause of the growth is contained in the mass itself, that we do not think of the possibility of some outside cause that may stimulate similar cell elements in other parts of the body and that some of them may be entirely independent growths originated by the same cause. To my mind the hypothesis I have suggested gives a much clearer idea of those unaccountable metastases that we could not explain on any reasonable grounds. We will all accept that a metastatic deposit may travel by the blood-stream, and we must accept that the lymph-stream carries the trouble along its course in the direction of its flow. We must also accept the fact that a growth creeps, say, across the middle line from, say, the breast, and we can trace the nodules in the course of spread by direct extension. And yet we see many cases of recurrence on the opposite breast, often in the outer upper quadrant, with not a trace of intervening growth. It is not just an occasional happening; it is a thing we are always looking out for, and the only explanation that is given is that it is lymphatic extension *against* the flow of the lymphatic stream. Such an explanation is against the laws of physics and experience, and I suggest that my hypothesis offers a much more reasonable explanation. The x that caused the original trouble is still present or has recurred, and it has affected another group of cells of the same class, stimulating them to malignant activity.

In one such case that I saw after writing this I noted three things. The right breast had been removed and there was (1) direct extension of small nodules in the skin across the middle line and elsewhere; (2) a large mass in the upper outer quadrant of the other breast with glands in the axilla; and (3) a third separately placed and much larger recurrence well below the scar. This last was puzzling till I thought of the possibility of a rudimentary breast in such a position. I believe that in this patient x was still at work, and in addition to the frequently noted stimulation of a growth in the other breast it had affected the rudimentary breast cells in addition, and that the two centres of growth were not recurrences in the ordinary sense but actually two primary growths set up by the same unknown factor that had stimulated the original breast tumour. Is it not reasonable to suggest that the cause which originated the primary growth may still be at work in these cases and that it may set up a similar type of growth in other parts that contain the same cell formation?

There are relevant observations on post-operative breast treatment, blood changes, and manifestations in bone that give credence to the theory I have put forward.

Does this Theory Help Us in any Way Towards the Elucidation of the Great Problem?

I think that it does, for it suggests very strongly that it is waste of time and energy to look for the cause of cancer by gazing down a microscope at the sections of a cell overgrowth, and the end-result of a factor that may or may not have been present when the specimen was taken. That, perhaps, is a negative benefit. It does, however, indicate that if we are to find the cause we must sift our cases and attempt to determine accurately in which of these x is still at work and find out in what way the blood differs from those in which the disease is only locally malignant—i.e., in which x is no longer present. It is among the living, not among the dead, that hope lies. Certain observations as to changes in bones make me confident that the cause of malignant cell overgrowth is a systemic one, and the obvious inference is that it will be found in the living blood. Until we know with certainty in which cases x persists, we must search every cancer case and particularly attempt to find a difference in the blood between those that develop the ill-omened cachexia, as compared with those in whom the disease is only locally malignant as shown by operation or radiation "cures."

I am quite satisfied that it is useless to look for the cause of malignant disease in the growth itself, and that the exciting cause will eventually be found elsewhere, either in the blood or carried by the blood, and that it will probably be found in some minute bio-chemical change which affects the reaction of the blood upon certain types of cell, those cells being particularly susceptible that have suffered from some mechanical or inflammatory source of irritation or which in the natural course are undergoing degenerative changes at the end of their life of functional activity.

A Summary.

It is a usual custom to summarise a paper, and I am indebted to my partner, Dr. J. M. Woodburn Morison, for the following which he handed to me after reading an early manuscript:—

Let x be the underlying cause of cancer.
" G " a tumour that is radio-sensitive.
" D " the death of the patient.
" L " " life " " "
" O " " operation.
" R " " radiation treatment.

Then $G + x = D$

$$G - x = D$$

$$\left.\begin{array}{l}G + x + R\\ G + x + O\end{array}\right\} D$$

$$G - x + O \quad \overset{L}{=}$$

$$G - x + O + R = L$$

Therefore, the only cases in which we can hope for cure are those in which we have a radio-sensitive tumour, an absence of the underlying cause, and complete extirpation *either by operation or by radiation* or by a combination of the two. If, however, a growth is radio-insensitive there is no chance at all unless, perchance, a surgeon is fortunate in removing the whole of a growth and x is no longer present.

In conclusion, I wish to acknowledge the very great assistance I have received, wittingly and unwittingly, from many of my colleagues, particularly those who collaborate with me in the X ray work of the Manchester Royal Infirmary, Dr. Morison, Dr. A. Burrows, Dr. R. S. Paterson, and Dr. E. W. Twining.

active progress now, and an indication of the results obtained is the purpose of this communication

Should the results obtained support the provisional hypothesis or a modification of it, then we can be said to have a theory of the action of these drugs, and such a theory should be capable of application (1) satisfactorily to explain apparent exceptions, and (2) accurately to predict the influence of one of these drugs upon the blood picture in a given case Such applications of the theory, if successful, constitute scientific proof of its correctness Both these exercises have been performed

The reason for publishing any of the laboratory *findings at this admittedly early stage of the investigation* may not at once be clear It has been reported that several laboratories in Germany are busily engaged in the search for an agent for the artificial induction of leucocytosis It seemed therefore not unwise *to record the fact that an investigation into* just such properties possessed by well known drugs had already been initiated It is not claimed that the necessary experiments, observations, and correlation of the results are as yet in anything but the very earliest stage

I have myself seen a number of successful cases, most of which were treated by novarsenobillon (there was no reason to suggest syphilis nor was the drug administered for this disease) A series of cases of trachoma was amongst those which made the most vivid impression There is, however, no intention to refer to the purely therapeutical aspects of these cases here as favourable testimony from this point of view is forthcoming from clinicians

An indication of the hæmatological results is given below —

TABLE I

Subject	White blood cells per c mm Before intramuscular administration of 1 gr mercury salicylate	White blood cells per c mm 24 hours later	Subject	White blood cells per c mm Before intramuscular administration of 7½ gr of quinine bihydrochloride	White blood cells per c mm 24 hours later
D M	7 000	20 400	J M	11 000	14 000
M P	8 000	17 000	C I *	9 300	12 700
M C	18 600	21 800			

* 5 gr only given

TABLE II—*Effect of Intravenous N A B (Dose varies from 0 3 to 0 6 g according to Size of Subject)*

Subject	Before N A B	24 hours later	7 days later *	24 hours later	7 days later
	White blood cells per c mm				
B F	7 200	10 200	9 800	—	—
J M	10 100	2 800	21 810	—	—
C I	7 200	10 200	9 300	—	—
K	7 600	10 600	12 400	17 100	14 600
B	8 800	13 000	13 800	14 100	—
I	7 300	12 500	10 800	13 200	—
G	7 400	12 000	14 000	10 600	—
M G	10 000	14 000	12 000	—	—

* Second injection given on seventh day

It will be seen from the tabulated results that mercury, quinine bihydrochloride, and novarsenobillon are powerful inducers of leucocytosis The investigation with regard to quinine was not continued for the following reasons (1) The injection is distinctly painful, and (2) it appeared to have no advantage over mercury or N A B

Previous leucocyte counts carried out for Dr Ferguson (at other laboratories) have shown that a tolerance to mercury is somewhat rapidly established the leucocyte count returning early to normal and being comparatively little raised by repeated injections In novarsenobillon we have an agent practically painless in administration and at least as safe *as either of the others in suitably selected cases* Its first effect upon the leucocyte count is at least as marked its period of maintained leucocyte increase much longer, and its effect at repeated injections very much greater and more constant than in the case of the mercury and the quinine There seems to be very little doubt that in novarsenobillon and its variants we have a very constant and dependable agent for inducing leucocytosis, where this is desirable

One of the apparent exceptions was a case in which the count before injection of novarsenobillon was 17 000 per c mm and 24 hours later had dropped to 12,000 per c mm The result however had been *anticipated as one of two probable results of the* injection The subject was a patient who had a very large acute boil ' It was anticipated that either (1) the boil would discharge completely within a few hours of the treatment, thereby rapidly removing *the cause of his natural leucocytosis and producing* a drop in the count, which, however, would be artificially prevented from returning to normal, or (2) he would have added to his natural a further artificial leucocytosis if the ' boil still persisted *as a focus of pus under pressure, and yield a count* somewhere near 25 000

In order to explain sundry cases where the customary relief does not occur I have suggested a modification of the simple leucocytosis theory " *of Dr Ferguson It seems but reasonable to believe* that however successful one may be in inducing leucocytosis the army of phagocytes will be ineffective if unattended by munitions of war, the multifarious antibodies ' and it is now proposed to *observe the effect of the administration of novarseno*billon to patients whose specific antibody formation has been stimulated by autogenous vaccines It appears to me a more sound rationale to bend to one's purpose not the cellular alone, but also the humoral *factors of immunity*

At first differential white cell counts were made, but it was soon seen that with very slight exceptions (in one or two cases there was slight eosinophilia, in others increase of endothelial cells and occasionally *some polymorph increase)* the variations in the relative counts remained within the limits of the normal The differential counts were then discontinued

These investigations will take time, but in due course the complete record will be to hand It appears to be a promising field in which laboratories having at their command a greater abundance of material than is at our disposal here could find a very valuable sphere of activity

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NORTH STAFFORDSHIRE INFIRMARY —On June 5th *the King who was accompanied by the Queen laid the* foundation stone of extensions to this hospital at Stoke on Trent which serves a population of close upon half a million A large addition is being made to the nurses home and a new ward unit provided the preliminary work for further enlargements is also being done The cost will be £150 000 and it is claimed that when the enlargements are completed the North Staffordshire Infirmary will be the largest hospital outside London It dates from 1815 when it was established at Etruria but it descends also from a dispensary started in 1802 It was rebuilt on the present site at Hartshill in 1869 the foundation stone having been laid by King Edward when Prince of Wales

LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE —Dr Edward Hindle, Milner Research Fellow *of the school has been granted leave of absence for two years* in order to undertake in conjunction with Major W S *Patton an investigation on the transmission of kala azar* in North China on behalf of the Royal Society During the *past six months Dr Hindle has been working on the biology* and life history of spirochætes and has investigated the *prevalence of leptospira in the neighbourhood of London* He has been successful in finding these organisms not only *in Thames water but in tap water and many other sources* On his way East Dr Hindle is calling at Calcutta in order *to see the work of the Indian Kala azar Commission* Whilst in China the Kala azar Commission of the Royal Society *will have a central laboratory at the Shantung Christian* University Tsinan where Dr Hindle expects to arrive *in the autumn*

Active Immunisation—We have made toxin for active immunisation, and Dr Okell has formalinised some toxin by the Glenny Hopkins technique, but we have no group of people available on whom to test the immunising efficiency of these toxins The results obtained recently in America already almost justify the conclusion that by testing and immunising the ward staffs in scarlet fever hospitals we can reduce attacks of scarlet fever amongst nursing staffs as satisfactorily as now, in many diphtheria wards diphtheria amongst the nursing staff has been reduced almost to nothing One point of importance here is that in the process of immunisation there is but little danger In diphtheria a careless miscalculation has in rare cases caused diphtheritic paralysis or death whereas the injection of very large doses of scarlet fever toxin into human patients has been followed by nothing more than a feverish attack lasting 24 to 72 hours with complete recovery thereafter There need apparently be no hesitation in arranging for the immunisation of suitable people

Treatment—The results hitherto obtained are encouraging, it is too early to say more yet But the great difficulty that faces us here is that of standardisation There are two possible methods the official U S A method and the rash blanching method

Official U S A Method—In principle this method resembles the titration of diphtheria antitoxin by the intradermal method in guinea pigs Mixtures are made each containing a fixed dose of toxin and a dilution of the serum under test the various mixtures are injected intradermically If a flush—i e a positive reaction—occurs obviously more serum must be used This is continued until a balance is reached So far as our experience of tests carried out on ourselves goes the process is reasonably satisfactory and enables one to get an idea of the value of a serum This value, of course is much less accurate than in the case of diphtheria antitoxin but still serves as a valuable measure of potency when arranging for the treatment of human beings The only trouble is the obtaining of a supply of Dick positive people on whom to carry out the tests The process of testing is practically painless and apparently free of danger so that when suitable opportunity occurs there need be but little hesitation in carrying out the test which is also a test of the patient s immunity to scarlet fever The tendency of a number of tests would be to immunise the patient against scarlet fever after which of course, he would be useless for this method of test The second method is the one that is being used in England in which the serum is tested intradermally on scarlet fever patients before its therapeutic use Into the rash is injected 0 2 c cm of dilutions of the serum proposed for use until the greatest dilution which will still produce blanching is found We have compared our own horse serum with samples very kindly sent us from American colleagues, the serum in use in England will usually blanch in a dilution of 1/200 or even 1/500 The number of comparisons yet made is very small, but they tend to show that our serum has a value at least equal to the American serum This method of testing appears to be more practicable under English conditions Unfortunately, no one can as yet tell us definitely whether this method gives the same relative values as the official U S A method Until this problem of standardisation is solved no great improvement in the potency of the serum available can occur We are using for the immunisation of horses the filtered toxin and the cocci themselves We have applied the ordinary methods of concentration on a small scale to this serum, but we have not up to the present been able to form any idea whether a concentration of the scarlet fever antitoxin does result I have little doubt that it does, for concentration has been used on a fairly large scale in America but so far as our own work is concerned we are still without definite information

Experience at a M A B Hospital

Dr F H Thomson (N E Hospital Metropolitan Asylums Board) said that a number of attempts had been made to obtain a curative serum for scarlet fever In 1896 Marmorek used an antistreptococcic serum, and later Aronson and Moser did the same In 1897 Weissbecker used the blood serum of convalescent scarlet fever patients but apparently in too small doses to be of value About 1910 Reiss and Jungmann used convalescent scarlet fever serum in doses of from 10 to 100 c cm, in a few cases with good results In 1914 Zingher reported good results from the intramuscular injection of whole blood taken from convalescent scarlet fever patients In 1923 Dr Dochez attempted to immunise a horse by injecting agar into the cellular tissue of the neck, and when the agar had solidified, the hæmolytic streptococcus thought to be the cause of scarlet fever, was introduced into the centre of the mass Some six months later the serum of the horse was sent to Blake, who reported very favourably on its curative properties However, Zingher in a paper read before a joint meeting of the Association of Pathologists and Bacteriologists and the Association of Immunologists at Buffalo on April 17th 1924 said that the results noted at the Willard Parker Hospital, New York, had been encouraging but not as striking as those reported by Blake and his associates Somewhat later the Dicks attempted to produce an antitoxic serum by immunising a horse with their toxin

Antiscarlatinal serum as now prepared by the Department of Health New York, as well as under the direction of Dr Dochez had Dr Thomson was informed been so successful that orders had been given to use it as a routine in all patients diagnosed as scarlet fever and admitted at the Willard Parker Hospital Further, the medical staff and the research laboratory had been so convinced of the specificity of this mode of treatment, and its result in reducing the death rate and diminishing the likelihood of complications that they felt it no longer necessary to carry out control series of serum and non serum cases The more important benefits arising from the use of antiscarlatinal serum in the United States were the more rapid fall of the temperature the statement of the sufferer that he so quickly feels his condition to be improved and the more rapid fading of the rash

It was well to note, Dr Thomson said that scarlet fever in the United States had recently been and no doubt was now, a more fatal disease than in this country As an indication of this he gave the total number of cases admitted, and the death rates during the five years 1919 to 1923 at the Willard Parker Hospital and at the North Eastern Hospital of the Metropolitan Asylums Board

Year	Willard Parker Hospital		North Eastern Hospital	
	No of cases	Death rate per cent	No of cases	Death rate per cent
1919	28	[illegible] 9	1104	0 98
1920	[illegible]14	1[illegible] 0	[illegible]	0 8
1921	1316	6 4	3300	0 94
1922	81[illegible]	8 [illegible]	1536	1 15
1923	89	4 [illegible]	1058	1 8

In February last, through the kindness of Dr R A O Brien and later of Dr A T MacConkey he was enabled to commence the treatment of scarlet fever with sera prepared by them The difficulty was to find suitable cases on which to test the curative value of the serum, and most of the cases selected could not be called other than mild attacks though all were not so Thus from the point of view of testing the value of the serum he was at a definite disadvantage when compared with New York Again, the paucity of cases suitable for this treatment at his hospital rendered it impracticable to compare the results with a series of non serum cases This form of control, however, with scarlet fever so mild as it is would have been of negligible value With regard to the statement that the patient felt distinctly better after the administration of the serum Dr Thomson had found

the difficulty in reading the result, it had only been employed where the rash was well marked or likely to develop. In 20 cases injected, 7 showed no blanching. In each case several dilutions, varying from 1–10 to 1–500, were used. One case only showed blanching with a 1–500 dilution, 6 with 1–300, and the remainder all showed blanching with dilutions from 1–10 to 1–300. Using 1–10 the blanching persisted right up to the time of the rash, and even after the rash had faded. Of the 7 cases that had shown no reaction, 3 had good rashes which faded within 24 hours of admission, and 2 also had good rashes which faded on the third day after admission. The average time for blanching to occur was 14 hours 20 minutes, the shortest period being 3 hours 20 minutes, and the longest 40 hours 20 minutes.

Dr. W. **MAIR** (Research Pathologist, M.A.B.) observed that it was curious that serum which blanched the majority of the rashes failed to blanch the individual rash. There was unfortunately no really satisfactory method of measuring either the toxin or the antitoxin. Another point of interest was the question of the period at which the Dick test became negative.

Dr. W. A. **LETHEM** said that at Liverpool he had found his negatives increase very largely as the period of convalescence went on, but had nevertheless obtained a small group of Dick positives where he would have expected Dick negatives. This he had attributed to a temporary lack of immunity at that period.

The **CHAIRMAN** said that at the North-Western Hospital not very much had been done, but so far as they had gone the results of the Dick test did not agree at all with one another, and apparently a good deal depended upon the toxin used. One of 1–6000 at the North-Western Hospital failed almost completely, though he understood it had been successful elsewhere. He had been glad to note the reserved tone of the discussion, for after all they were not so sure of their ground as with the Schick test. A question had been raised as to the number of nurses in the Board's institutions who had caught scarlet fever. Up to 1911 the Metropolitan Asylums Board had published the number of cases of all infectious diseases contracted by their staff, and from those figures it would be easy to calculate the incidence up to that date. Since that year it was doubtful if the information was available. Records were, however, kept at the several hospitals, and it would be possible to obtain the data if necessary. The cases of scarlet fever seen nowadays were so mild that it was better to leave them alone, and that was one of the reasons why he had not himself yet tried the methods under discussion. He had not had for some months a really serious case of scarlet fever. One also had to remember that in the past sera had been tried with varying results. In typhoid fever, for instance, some curious results had been obtained in the use of serum.

Reply.

Dr. **O'BRIEN** agreed that most scarlet fever cases that occurred in London were very mild, and that one would hesitate to add in any way to a patient's discomfort in such circumstances. At the same time it would be well to bear in mind the possibility of complications being reduced in severity by the use of the system. In concluding, Dr. O'Brien gave particulars of two interesting instances. In the first, eight cases had been sent into hospital diagnosed as scarlet fever. They did not appear to be scarlet fever to the admitting physician, who had them Dick tested. Negative results were obtained in each case; they were put in a scarlet fever ward, and did not get the disease. In the other instance, six positives were obtained and up to that day four had caught scarlet fever.

Dr. **THOMSON** said that, as a matter of fact, none of the cases in his hospital had been severe, but that was not the point. Scarlet fever varied in severity over long periods, and not knowing when it would again become serious they should be prepared to deal with it.

ROYAL SOCIETY OF MEDICINE.

SECTION OF OTOLOGY.

A MEETING of this Section was held on June 6th, Dr. **KERR LOVE**, the President, being in the chair.

Artificial Aids to Hearing.

Mr. J. F. **O'MALLEY**, in opening this discussion, said the instruments which had been introduced to aid the deaf could be classified into the mechanical and the electrical. Among the former were the ordinary speaking tube for carrying sound to the listening ear, sound collectors on the same principle as sea shells, some of which were worn as artificial auricles, banjoes, trumpets, &c., either straight or coiled. The electrical aids were of two types: the ordinary one was the battery transmitter and receiver, and the regulator, the effect of the instrument being capable of intensification by moving an arm on a rheostat. The receiver was supposed to act by air conduction and bone conduction, but one form acted by bone conduction only, and one make of instrument conducted sound by bone conduction only, being placed against the mastoid. An apparatus had also been devised for lip-reading. By combinations of the various devices it was possible, he said, to make 90 different types of instrument. For moderate degrees of deafness he considered the mechanical aids were the most valuable and the least troublesome; while for the more intense degrees of the disability the electrical were the better.

Illustrations of typical examples were projected on to the screen and demonstrated by the speaker.

Mr. W. M. **MOLLISON** said that he had recommended these aids very little; he usually sent people requiring them to an electrical expert. His general experience was that patients with high degrees of middle-ear deafness and otosclerosis were almost always helped by some form of electrical instrument. Cases of internal-ear deafness and short bone conduction were seldom helped by them, though they were sometimes. A useful rough indication in advising patients what to get was to ascertain, by means of the monochord, the highest pitch they could discern. Many could not hear the monochord at 30 to 40 cm., but yet could hear it well through the bone, and these would practically all get some benefit from an instrument. Small cornets worn under the hair were very useful.

Dr. W. H. **KELSON** asked whether members had any experience of cases of deafness who were made worse by the continual use of these instruments. He had heard such complaints, which included headache. Possibly over-use produced an inflamed organ.

Mr. **HERBERT TILLEY** spoke of the great help in hearing sometimes given when there was a large perforation of the drum by placing in the ear a small pledget of wool soaked in liquid paraffin. He did not advise a gutta-percha disc, as it was liable to become foul and septic. The wool plug could be used gradually at first until the patient was accustomed to it.

Mr. A. R. **TWEEDIE** said Bárány considered that the sound proceeded through the foramen ovale and then through the helicotrema and the foramen rotundum, and that hearing was due to excursions of the round window with excursions of the oval window. This pre-supposed that there must be an exposed and a tolerant middle ear. If a paraffin or mercury droplet were run into the external auditory meatus and the head tilted backwards to enable the droplet to pass into the fossa rotunda, so that it took the place of the normal droplet of mucus, it ensured the sound waves going only one way, the correct way.

The **PRESIDENT** said the chronic non-suppurative conditions of the middle ear constituted one of the reproaches to otology. Great advances in the surgery of the ear had been made in the last 30 years, but practically none in this particular part of the field. Electrical aids to hearing were far too expensive for most people, and often their effect was uncertain. Mere increase of the loudness of the voice as heard was not sufficient, as the voice was compound, and no

tolerated well Weight was well maintained but not increased In many cases there was marked improvement in general health, the patients were able to carry on work (one was able to resume work from which he had been absent for some time), cerebration improved, and the power of application to work was considerably better than previously In the cerebro spinal fluid the cell count decreased in all cases with a decrease of globulin and a diminution, even a disappearance, of the positive Wassermann reaction the goldsol test of Lange showed marked improvement in every case The Wassermann reaction of the blood was not materially altered The great point in the superiority of tryparsamide to any other method was the ease of administration without any discomfort to the patient From the fact that it did not affect the blood Wassermann to any great extent, it would appear advisable to exhibit adjuvant therapy with salvarsan and bismuth at the same time Tables were shown demonstrating the diminution of the cerebro spinal fluid, Wassermann reaction, cell count, globulin, and goldsol curve, after treatment by tryparsamide, this not having occurred previously with other drugs

Auto Intoxication and the Nervous System

Dr Chalmers Watson read a paper, illustrated by two cases on the rôle of auto intoxication or auto infection in the ætiology of disease of the higher and lower nervous system He laid stress on the limitations in the treatment of nervous disease Diseases of the nervous system, he said, were divided into a watertight compartment and held separate from medicine in general, consequently the outlook was limited and progress would not be made till the matter was considered on broader and sounder lines

Reviews and Notices of Books.

Physique and Character

By E Kretschmer Translated from the second revised and enlarged edition, by W J H Sprott B A London Kegan Paul 1925 Illustrated Pp 266 15s

The conception of the correlation of bodily structure with mental character is not new in the history of medical science The early enterprises of Gall in this direction were confined to the variations in size and shape of the skull, and gave rise to the practice of phrenology, but with the negation of any correspondence between the external configuration of the head with the pattern of cerebral convolution the whole schema fell into discredit Another notable attempt was that of Lombroso, who first formulated the conception of "stigmata of degeneration,' which still has a certain validity inasmuch as mental inefficiency is a manifestation of degeneracy showing itself both psychologically and physically Recent investigations have shown that the visceral organs, particularly the endocrine glands, in their association with the autonomic nervous system, play an important part in psychological function Consequently the psychiatrist and the psychologist are once more paying considerable attention to physical structure in relation to mental function

The valuable portion of the book under review consists of the observations made by the author on the correlations between certain physical types and the two general mental dispositions towards a schizophrenic or a cyclothymic reaction As is stated in the preface, a certain amount of confirmation has been derived from other workers, and providing that the cautious and critical tenor of the book is reflected in the mind of the reader, the results may prove of considerable value from the anthropological and the biological standpoints A careful and comprehensive scheme of examination was applied, measurements of the relative proportions of the skull, facies, limbs, and trunk playing a large part in the differentiation of the types Attention is given to any indication afforded by the condition of the skin or any organ which can be examined from the surface of the body The age of onset of certain functional activities, such as the menses, is noted, and the time of deposition of fat The general distribution of hair and of the subcuticular fat is mapped out Side by side with this physical investigation are the psychological description of the subject and of any factors in the ascertainable heredity which showed a bearing on the problem

Some 200 cases were dealt with in this way, and there emerged three main types of physique which the author terms the asthenic, athletic, and pyknic respectively The asthenic individual is 'the lean man with a skin poor in secretion and blood, narrow shoulders from which hang lean arms with thin muscles and delicately boned hands; a long narrow flat chest, a thin stomach devoid of fat, and lower limbs which are just like the upper in character In the average values the weight falls behind the height, and the chest measurement behind that of the hips." The athletic type is the middle sized man with wide projecting shoulders, a well developed chest, firm abdomen, and a trunk tapering in the lower region The bony skeleton is heavy and the musculature is hypertrophied This type has certain relations with the endocrine abnormalities such as acromegaly and some dysgenitalic states The pyknic type is characterised by the pronounced peripheral development of the body cavities the head, chest and abdomen, and a tendency to the distribution of fat around the trunk In distinctive cases the appearance is that of an individual of middle height, rounded figure, with a soft round face on a short massive neck; the fat abdomen protrudes from the deep vaulted chest which broadens out towards the lower part of the body In addition to these three main types there are several others of a mixed and dysplastic variety which occupy extreme and intermediate positions The author finds that there is "a clear biological affinity between the psychic disposition of the manic depressive and the pyknic body type, and between the psychic disposition of the schizophrenic and the bodily characteristics of the asthenic, athletic, and certain dysplastic types" The description of the types is full and distinctive, and the question of mixed constitution, psychological and physical, resulting from variants in the hereditary family groupings, is dealt with at considerable length The second part of the book, dealing with the cycloid and schizoid temperaments and their incidence among average individuals and in men of genius, is less convincing

The arrangement is good, and the printing clear On page 126 in paragraph 3 "liable" should read "labile" It is a pity that the translator should have aimed at such a literal standard in his work, as the text does not provide easy reading Further, the translator shows an occasional lack of familiarity with the use of technical expression—e g, the terms "idiocy" and "imbecility," which connote congenital mental defect and should not be employed in describing demented states resulting from the psychotic disturbances of adult life

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The Story of Anzac

Official History of Australia in the War of 1914–18. Vol II *The Story of Anzac* By C E W. Bean. London Australia House, Australian Book Company, Australia Angus and Robertson, Sydney 1921 Pp 700 28s

A thrilling story of the heroism and persistence with which Australia and New Zealand threw their young armies into a great adventure, which achieved much but failed of complete success, is here told, the failure is now known to have occurred through the inexperience in the directors, and the cross-currents of policy which have always weakened

series of "Nursing Manuals," and that it is framed for those with a limited scientific training is suggested by finding such words as "cubic centimeter" defined in the glossary at the end. How a nursing course could properly include such a book is beyond understanding, and one suspects that it is one of many attempts to do what mankind has ever tried—find a royal road to learning. But for whoever it has been written, it will prove a very good book for those who have been adequately prepared to use it.

TEXT-BOOK FOR NURSES.

Anatomy, Physiology, Surgery, and Medicine. Third edition. By E. W. HEY GROVES, M.D., B.Sc., M.S., F.R.C.S.; and the late J. M. FORTESCUE-BRICKDALE, M.A., M.D. Oxf., M.R.C.P. Lond. The Medical Section revised by J. A. NIXON, C.M.G., M.D. Cantab., F.R.C.P. Lond. London: Humphrey Milford, Oxford University Press. 1925. Pp. 615. 20s.

SINCE its first appearance in 1912 "Groves and Brickdale" has been recognised as a valuable text-book for nurses. The third edition does not differ greatly from the original issue. The object of the authors has been to present the elements of anatomy, physiology, surgery, and medicine in a simple yet accurate manner, and in the preparation of this new edition the text shows signs of careful revision to secure this end. In the medical section some of the chapters have been rewritten and a new chapter on Hygiene has been added. This contains a short account of such subjects as water-supply, ventilation, refuse disposal, personal hygiene, disinfection, heating and lighting, all subjects with which the modern nurse must be to a certain extent familiar, for the modern patient has often more than a smattering of knowledge on these public health questions.

A close study of this book should enable any nurse to grapple successfully with the various theoretical examinations with which she is confronted.

JOURNALS.

JOURNAL OF INDUSTRIAL HYGIENE, March and April, 1925.—In the March issue Dr. H. W. Haggard discusses the toxicology of hydrogen sulphide, which he concludes may produce fatal poisoning with a concentration of 0·2 per cent. of the atmosphere. Below 0·1 per cent. respiration is little affected. The heart continues to beat after respiration has failed; therefore artificial respiration as a method of resuscitation is important. The gas is an irritant to the eyes as well as being toxic. When inhaled in small amounts, hydrogen sulphide is rapidly oxidised in the body, when its toxicity is neutralised.—Inhalation as a path by which industrial poisons enter the body is dealt with by Prof. L. Preti, who points out that the respiratory apparatus is a path of entry for most industrial poisons whether in the form of gas, fumes, vapours, or dust. Neither gases nor fumes produces pulmonary lesions different from those of ordinary inflammatory processes. Certain dusts lead to pneumonoconiosis; while toxic dusts, such as those of lead, cause their specific form of poisoning. The writer considers compulsory insurance against occupational diseases a valuable way of bringing about their prevention.——In the April issue the subject of punctate basophilia in lead workers receives attention from Dr. A. Sellers, who has conducted blood examinations of a number of men exposed to lead absorption. He considers that the presence of punctate basophilia is an extremely delicate method of detecting lead absorption, and that its degree affords indication of the amount of absorption taking place, even though it cannot distinguish between absorption and clinical symptoms of poisoning.—H. Green describes methods for photographing and measuring fine particles, such as are liable to be inhaled in industry. He points out the difficulties associated with the work. His paper is one which must be of value to photomicroscopists.—The third of a series of articles dealing with the laundry trade is contributed by Miss M. Smith, who discusses atmospheric conditions as found by her. She concludes that variations in output are not unconnected with the problem of ventilation, and points out that even where temperature cannot be reduced owing to machines, such as calenders being hot, still conditions can be mitigated by keeping the air moving. The evidence she quotes supports the need for keeping laundries cool by such things as lagging steam pipes and covering lids of presses with asbestos.—The last article, by Prof. E. L. Collis and Dr. H. M. Vernon, reports upon a comparison of old and new processes in the tinplate industry. A new labour-saving device, which combines several processes previously carried out by hand, is described. This machine exposes the workers to less radiant heat, to lower air temperature, to more rapid air current, and less fumes and dust. The men employed under these conditions were found to experience better health and to possess greater earning capacity.

THE price of Mr. H. W. S. Wright's "The Conquest of Cancer," reviewed last week, is 2*s.* 6*d.* and not as stated.

MINISTERIAL DECISIONS ON THE CONDUCT OF INSURANCE PRACTICE.

REPORTS OF SIX INQUIRY COMMITTEES.

WE print below summaries of the findings of six Inquiry Committees appointed by the Minister of Health during the past six months to investigate representations that the continuance on the panel of an insurance doctor would be prejudicial to the efficiency of the medical service of insured persons. Except where otherwise stated, the complainant was an Insurance Committee. Those facts only are summarised which the Inquiry Committee found to be proved by the evidence submitted to them. The decision given by the Minister after considering the Committee's report is appended to each case. It will be observed that in three cases the Minister, although deciding that the doctor's name should not be removed from the Medical List, imposed a pecuniary penalty. The justice of this policy, more especially in connexion with Cases 4 and 5, has been called into question by some representative members of the profession.

(1) *Failure to Keep Adequate Records, or to Supply R.M.O. or Insurance Committee with Information.*

In this case the Minister himself initiated the appointment of the Inquiry Committee.

(*a*) Dr. A. B. practised in an industrial area and had at the material time 317 insured persons on his list. On various dates he received from the R.M.O. 17 forms R.M.2[1] in respect of insured persons to whom he had issued certificates of incapacity, and subsequently R.M.O. sent him reminders. As the doctor failed to return the forms, the divisional medical officer wrote special letters in seven of the cases, calling the doctor's attention to his failure to carry out his obligations under his terms of service. Subsequently the divisional medical officer visited Dr. A. B., who then admitted receiving the forms and reminders and promised to comply with the regulations in future. None of the forms was in fact returned. A year later the R.M.O. visited the doctor and pressed for the return of two of the forms which were specially needed. The doctor promised to return them, but did not. Since the beginning of 1921 Dr. A. B. had returned to the R.M.O. only three out of 20 forms R.M.2 which had been sent to him. The Inquiry Committee were of opinion that Dr. A. B. had "persistently and without any justification"

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[1] This is the form which a doctor is required to complete when the Approved Society of one of his insurance patients to whom he has issued a certificate of incapacity asks for a special examination of the patient by a medical officer of the Ministry of Health.

The Insurance Committee found that two further charges were not proved except as to the issue of one prescription without an examination of the patient They recommended that Dr I J be ordered to pay the costs of the Local Medical and Panel Committee

Minister's Decision

The Minister decided that Dr I J's name should be removed from the Medical List, and that the costs of the Local Medical and Panel Committee, taxed as between party and party, should be paid by Dr. I J

Note—In this case the doctor had sought to retire from the panel on the day preceding the inquiry, and had sold his practice

(4) *Alleged Negligence in Diagnosis*

On the evening of June 28th, 1924, O P, an insured person on the list of Dr Q R called at the doctor's surgery and complained of abdominal pain of some 24 hours' duration and of having twice vomited in the morning of that day His temperature was 98 6° and his pulse 84 Dr Q R made "a most careful and complete examination" in view of the possibility of appendicitis, and in the absence of tenderness or rigidity came to the conclusion that the patient was suffering from intestinal colic He prescribed castor oil and a rhubarb and chloroform mixture ordered the patient to bed, and gave a first certificate of incapacity in accordance with his diagnosis He made a full note of his observations on the patient's record card The doctor did not call to see the patient on the 29th On the 30th, as the pain continued and the patient again vomited, his wife called at the surgery in the evening, when the respondent was not there She called again later There was considerable conflict of evidence at the inquiry as regards what took place at this interview between the patient's wife and the doctor The Inquiry Committee thus summarised their impression of what had occurred The patient's wife "made known to the respondent that the deceased was still in pain and not better, she made inquiries as to diet and requested the respondent to call and see her husband The respondent did not offer to call and did not in fact, call on that evening, but recommended the external application of hot flannel and turpentine" On July 1st the patient's wife left a message at the surgery asking the doctor to call because her husband was worse, the doctor called at about 12 30 P.M (the second call on his round) and upon examination came to the definite conclusion that the patient was suffering from appendicitis and so certified him The patient was removed to the infirmary at 2 15 P.M Some six hours afterwards an operation was performed and the patient died on July 4th from peritonitis and toxæmia The operation disclosed a swollen and œdematous cæcum, the appendix which was gangrenous and perforated, lying in a retrocæcal position and tightly bound down

The Inquiry Committee expressed the opinion that (*a*) in view of the condition disclosed at the operation an early diagnosis would have been difficult and that the risk involved in an operation on such an appendix is greater than in a normal case (*b*) that there could be no suggestion of negligence or want of care in relation to what happened on June 28th and 29th, (*c*) that as regards June 30th, having knowledge that a person suffering from intestinal colic had not recovered in 48 hours and was still suffering pain it was the doctor's duty from a professional point of view to take control of the situation and to insist on paying a visit on the evening of that day On this point the Inquiry Committee were not satisfied that Dr Q R was justified in relying on his own impression of the information furnished by the deceased's wife without assuring himself whether or not some other cause had supervened to explain the continuance of the illness The report adds "At the same time we doubt whether the word negligence is apt as a description of the criticism set out in the preceding sub paragraph Certainly gross negligence as alleged in the representation cannot be imputed to the respondent We would rather describe our criticism as connecting an error of judgment as to the urgency of the case having regard to the information possessed by the respondent on the evening of June 30th and the morning of July 1st

The Inquiry Committee considered that it was quite impossible to attribute the death of the deceased to anything done or left undone by the doctor While feeling obliged to reject evidence as to the doctor's care and skill in his insurance practice, the Committee hardly doubt that the Minister would always be ready to receive reports of such good conduct although not based upon sworn evidence" The Committee finally expressed the opinion that the charge of gross negligence put forward in the representation had failed, they added 'We cannot however, hold that the complainants were not justified in all the circumstances in presenting their representations, and we think that the justice of the case will be met by our recommending that each party should bear their own costs of the inquiry'

Minister's Decision

The Minister decided that Dr Q R's name should not be removed from the Medical List and that no order should be made as to costs In the covering letter communicating this decision the Minister stated that the inferences of fact referred to in (*c*) above indicated "a failure to provide a proper standard of medical treatment" and he accordingly decided to withhold £10 from the doctor's remuneration

(5) *Alleged Negligence in Diagnosis and Treatment*

S T, aged 18, a male insured person on the list of Dr U V, had on more than one occasion previously been treated by this doctor for septic sore throat On the evening of April 5th, 1924, the patient attended at the doctor's surgery for treatment of a sore throat The patient was then suffering from acute follicular tonsillitis but without any marked fever and the doctor prescribed suitable medicine and treatment and issued certificates on April 5th, 12th, 19th, and 26th The doctor visited the patient at his home on April 6th, 7th, 9th, 11th, 13th, 15th, 16th, 17th, 19th 20th, and 22nd, and during this period continued to treat the patient for tonsillitis On April 9th the patient showed signs of a broken quinsy On April 14th he had one single attack of nasal hæmorrhage, and on the night of that day and on two subsequent days suffered from regurgitation in an attempt to take liquid food, the doctor was informed of these symptoms From about April 16th the patient's speech was affected and on or about April 21st the patient suffered from pains in his chest On April 26th—the patient then having no temperature—the doctor recommended a change of air, and permitted the patient to be out of bed on the three succeeding days The patient was worse during the days April 26th to 29th, and was seriously ill when he visited the respondent in the surgery on April 30th On that day the doctor diagnosed the case as being probably one of diphtheria, mainly owing to a test of the soft palate which showed signs of paralysis In the opinion of the Inquiry Committee the patient was, in fact, attacked by diphtheria on April 12th or a few days thereafter Following upon his diagnosis of diphtheria the doctor gave the necessary certificate enabling the patient to be removed to hospital The patient died from the effects of diphtheria and Vincent's angina The doctor did not throughout the period of treatment take a swab of the throat.

The Inquiry Committee formed the opinion that the doctor did not suspect diphtheria until April 30th They considered it impossible to state with certainty that a swab taken at the appropriate time would have given a sure indication of the presence of the disease, but they regarded as unfortunate the fact that the doctor, in his persistent diagnosis of tonsillitis, did not adopt this further test for the purpose of checking his opinion Apart from any question as to the degree of skill possessed by the doctor, the Inquiry Committee were of opinion that no possible suggestion could be made against him of any neglect in treatment They thus expressed themselves "When a charge of gross negligence is made against a doctor it seems just to avoid an attitude of mind which—to use a colloquial phrase—savours of being wise after the event and not to attach undue weight to the death of the patient with the obvious exception of cases in which the death can be proved to be attributable to such negligence In our opinion the charge of gross negligence wholly fails, we think that the complainants were not justified in making their representation and thus putting in motion the machinery which involved the inquiry heard by us In pursuance of this view we recommend that the complainants be ordered to pay to Dr U V his taxed costs of the inquiry' The Inquiry Committee drew attention to the marked fairness and impartiality displayed by the Insurance Committee's representative in conducting the case

Minister's Decision

The Minister decided that Dr U V's name should not be removed from the Medical List and that the costs taxed as between party and party, should be paid by the Insurance Committee In the letter communicating this decision the Minister stated that he was advised "that some of the symptoms from which, according to the report of the Inquiry Committee, this patient suffered were such as should have suggested the presence of diphtheria to any practitioner exercising a reasonable degree of care and skill in his attendance on the patient with sufficient force to make it incumbent upon him to take such steps as were

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THE LANCET.

LONDON: SATURDAY, JUNE 20, 1925.

CHANGING TYPES OF DISEASE.

IN their recent addresses to the members of the Inter-State Post-Graduate Assembly of America, both Lord DAWSON and Sir THOMAS HORDER laid special stress upon the opinion, which has been slowly growing up in the many branches of the profession, that a large proportion of our present-day maladies are the product of the rush and jostle of modern life. This conception Sir THOMAS HORDER closely allies to a further one, and makes some suggestions as to their interdependence. He believes that at the present day we are beset *to an increasing extent by infections for which the less pathogenic types of micro-organisms are responsible, and, in fact, that* we are becoming "more and more the prey to our saprophytes." This, he further suggests, is a direct outcome of nervous strain. The thesis is an unattractive if stimulating one, but one which, for these very reasons, demands the most careful and staid examination before it can be accepted. That there is an ebb and flow in the severity of certain diseases there is no room for doubting, as a comparison of scarlatina in the time of SYDENHAM, in the eighteenth century, and at the present day will amply show. What determines these fluctuations we do not know, and a question as to the reason for the decline in incidence of other infections does not find us much better enlightened. Whilst a fuller knowledge of the causation and pathogenesis of typhoid, tuberculosis, and typhus, to name only three of the acute infections, might be expected to contribute mainly to their gradually diminishing incidence, it seems undoubtedly the case that in many such conditions this decrease cannot be truly claimed as a triumph for bacteriology, but that "common-sense" and the ordinary hygienic measures indispensable to the comfort of crowded modern life have initiated this decline, which, in the case of any communicable disease, will tend to go on simply from a reduction of the number of carriers in existence. In such cases knowledge has often advanced *pari passu* with the decline of the disease and has not been, strictly speaking, responsible for it, although no doubt contributing. There is a possibility that in accepting and congratulating ourselves upon the reduction in incidence of such diseases we may tacitly assume a reduction in their severity, simply from the knowledge of a reduced total mortality. In many cases this is definitely not so, and there is no reason to believe that either tubercle or typhoid are any less virulent now than at any time in the period with which we are especially concerned. Granted, then, that certain diseases are declining in incidence, if not in virulence, this is to some extent offset by an increase in other directions. There are, on the one hand, the epidemic maladies, such as influenza, which in recent years has been so severe a scourge, and the less well understood condition of encephalitis whose pathogenesis and transmission are yet unknown; whilst of the more chronic conditions arterial disease and cardiovascular degeneration would appear to be increasingly prevalent.

If we accept, as we are bound to do, the decline of many of the infections and make due allowance for the improved hygiene and régime of modern life —which must be held of paramount importance in this direction—we have yet to ask *if this satisfactory state of affairs can be entirely explained on such lines, or does bacteriology offer any further explanation?* The ability to answer the question exactly involves a knowledge of one of the most obscure fields in this branch of medicine, and at the present no complete answer can be given. It is possible that in the passage of time bacteria may slowly change their mode of life and tend to move from a position of pure parasitism towards one of symbiosis and ultimately of saprophytism. It has been pointed out repeatedly that the state of ultra-parasitism is not a desirable one from the point of view of the organism's survival, since death of the host will bring in its train death of the parasite and ultimately the extinction of the latter. Thus the hypothesis that certain bacteria may, in the course of their evolution, become modified in virulence, so as better to accommodate themselves to a long life in the tissues of the invaded person, is a not unreasonable one and would connote a change in type and a lessened severity in the disease which such an organism caused. On the other hand, it appears *certain that the pathogenic organisms have been originally derived from saprophytes of the same type and that, for example, the typhoid bacillus is a member of the large group of intestinal coliform* organisms which has specially developed the parasitic habits and with this its distinctive characters; and, in like manner, the spirochæte of syphilis is probably derived from the saprophytic spirochætes common upon the genital organs. In such ways alterations in the severity of a recognised disease may be correlated with slow changes in the degree of parasitism possessed by its causal organism. Sir THOMAS HORDER has singled out the condition of ulcerative endocarditis. No doubt the impression gained by clinical and post-mortem experience over a number of years is that the more acute, "malignant," types of the disease are becoming fewer and that the more chronic, or subacute, type, with less clamant symptoms and the occurrence of large non-suppurating infarcts, is on the increase. Although conclusions based upon impressions are notoriously uncertain, in the absence of any available statistical information upon the subject we may, for the moment, accept this. The condition is most commonly a streptococcal infection, and it is significant that of all the organisms studied by medical bacteriologists, the streptococcus group seems the least well defined, the most ubiquitous, and the most mutable. F. W. ANDREWES long ago suggested that this group was in an actively evolving condition and pointed to the main types which, according to his classification, seemed to be emerging. Further knowledge supports this view, and because of the uncrystallised condition of the whole group it remains the despair of the systematist. The present period of medicine may well be the period of streptococcal infections, and from erysipelas, puerperal fever, broncho-pneumonia, and scarlatina (for the last of which the evidence in favour of a streptococcal causation is weighty), through such more chronic conditions as endocarditis, and possibly, rheumatism, to the minor infections of teeth and tonsils, we are constantly meeting with the streptococcus in its different grades of activity. The factors controlling its varied degrees of virulence are not understood. Virulence, at the best, is a difficult matter to assay, and the search has been directed more towards the

dubious advantage if it encourages non-segregation, and unnecessary if segregation is imposed. But the New Zealand Committee does not agree that sterilisation is as yet impracticable. Though in relation to sexual offenders the report confesses that the available information is inadequate for final judgment, in relation to mental defectives it definitely advocates that the Eugenic Board be given power in suitable cases to make sterilisation a condition of release from mental institutions or of removal of name from the register. Persons thus operated upon and liberated should be released on probation with power to reincarcerate them in institutions if they are found to be leading an immoral life or for other sufficient reason. If the Dominion embarks upon this experiment, we shall watch its progress with interest. Our present information, derived from some of the United States of America, is uncertain and incomplete. Some of the States—Indiana for example—passed sterilisation statutes as long ago as 1907. But under the workings of the American constitution (which are hard of comprehension by outsiders) some of these statutes have been declared void, whether as contravening articles of the State's constitution which guarantee to the people "life, liberty, and the pursuit of happiness," or as infringing the constitutional objection to 'unreasonable classification,' since persons confined in State institutions are less apt to have children than the greater number of persons no more fit who, because of the prosperity of their parents, can be at liberty. In many case the statutes have remained a dead letter. Recent statistics are not available, but it is stated that four years ago there were 120 State institutions legally authorised to perform the operation of sterilisation, and that only 31 of these had made use of that authority. In the absence of definite experience New Zealand does well to move without precipitancy. We note that the Committee proposes no such operation be performed without the consent of the parents or guardians of the patient. The proposals will, of course, require an Act of Parliament, and the main difficulty of administering the Act will be the fixing of an exact standard of mental deficiency.

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A MEDICO-LEGAL INSTITUTE.

THE annual general meeting of the Medico-Legal Society will be held on Tuesday, June 23rd, at 8.30 P.M., at the Royal Society of Medicine, 1, Wimpole-street, W., when advantage will be taken of the occasion to consider the suggestions of a Committee appointed by the Council of the Society upon the foundation of a Medico-Legal Institute in London. A summary of the suggestions of this Committee runs as follows:—

1. That it is desirable to have a Medico-Legal Institute in London for the investigation of medico-legal cases and for the control of the teaching of Medical Jurisprudence.

2. That such an Institute would be available for the carrying out of medico-legal investigations for the whole of England and Wales if required, until similar institutes were established outside London in University centres in England and Wales.

3. That for the purposes of Medico-Legal investigation and research the Institute should be under the control of the Home Office, and that for the purposes of teaching the Board of Education, the University of London, and the Royal Colleges of Physicians and Surgeons should exercise control.

4. That a Medico-Legal Museum should be formed in the Institute.

5. That the Medico-Legal Institute should provide facilities for the post-mortem examination of bodies sent to the Institute by coroners (these cases being used for teaching purposes). The Institute should provide specially trained experts from its staff, who, at the request of a coroner, would be available for making post-mortem examinations in any district.

6. That the medical staff of the Institute should be composed of a certain number of full-time experts—e.g., a director of the investigations, the holder of the Chair of Medical Jurisprudence, a toxicologist, and a bacteriologist, and of a certain number of part-time experts, preferably those engaged in pathological work.

7. That the association of the Institute with the University of London would afford facilities for consultation with the professors of the different branches of Science and Medicine in the University.

8. That the Institute having a full-time staff and possessing valuable medico-legal specimens, would afford special facilities for research.

9. That the Institute would be in the best position to provide adequate instruction for medical students in London, and would be a valuable centre for post-graduate teaching and for the training of medical men for posts such as that of police surgeon.

The proposals thus formulated open up for discussion a subject of considerable importance. The cases which in courts of law bring medical practitioners into contact, and sometimes into conflict, with members of the legal profession, are such that in the public interest they should secure full consideration in all their aspects. Those most directly concerned as parties vary from accused persons whose lives are in jeopardy, to others whose interest it is to secure personal damages in respect of physical disability, and the aim sought is ever the same, that justice should be done. It may safely be said that this can only be achieved through medical men, usually present as witnesses, and lawyers engaged as advocates, having the best possible training available for the parts that they have to play and appreciative knowledge of the issues involved. On ordinary occasions it has frequently appeared to us that the medical man has grasped the legal aspects and issues that have to be considered more fully and with a better sense of their import than the barrister or solicitor or possibly the judge, is able to do with regard to the medical points raised. No doubt in this the doctor has the simpler task of the two, and presumably the scheme of the Medico-Legal Society's Committee is prompted by a desire to provide education in medical jurisprudence for the benefit of solicitors and barristers, as well as of doctors. If this is so, the Council of Legal Education might be included among the controlling educational bodies.

In its general aspects the scheme should prove attractive to medical men and students, who will see in it a promise of post-graduate instruction and efficient training and of the provision of scientifically compiled records, illustrated by examples of phenomena outside their normal experience. The supply of experts authenticated as such by a central body carrying official weight, may be found of considerable value by others, besides coroners, seeking expert advice and assistance. The problem of financing such an Institute has apparently not yet been tackled. This may not prove a serious one, since the public already is interested. The general attention aroused by some recent murder trials, the Harnett case, and the Bateman appeal, has not been evoked only by a morbid desire to be thrilled by details of "human interest." The public has seen that in questions of medical opinion the law and medicine are not always in accord, and their practitioners not always in sympathy. The founding of a Medico-Legal Institute should therefore meet with a substantial measure of general approval, if it is realised that the ultimate object of medical jurisprudence as a study is that justice should be done with the utmost possible certainty and efficiency in the many difficult and doubtful cases in which medical evidence is a determining factor.

under training, and benefit so rapidly from it. Indeed, he talked so much and so enthusiastically about it that it was heard of by the King of Egypt, who ordered that his bodyguard should be examined and treated forthwith. In all, treatment was extended to 1214 serving soldiers, while 969 were told off to be treated when the training period was at an end. The reports from regiments were that recruits this year did not faint on parade, nor did they, as formerly, complain of schistosomiasis. This very interesting story is detailed by Major Spence in a thesis for the degree of M.D. Edin., which appears with illustrations in the *Journal of the R.A.M.C.* for May, and is well worth reading, particularly if taken along with his previous paper, on the Wady Halfa Quarantine to protect the Sudan against worm-infected labourers from Egypt, in the same publication for last November.

DUODENAL CATHETERISATION.

THE merit of being the pioneers of this method of investigating the contents of the duodenum belongs, perhaps, to J. C. Hemmeter and Max Einhorn. Various observers have from time to time modified the procedure and the nature of the instruments required, and recently Dr. Alberto Trossarelli has published the results of his work in this respect at the Mauriziano Hospital at Turin.[1] He makes use of a rubber tube of 5 mm. diameter and 1·25 metre long, with a metallic perforated extremity. The tube is filled with an emulsion of barium sulphate which by rendering it opaque facilitates its passage by means of the screen across the stomach and through the pylorus, which is induced to relax by the introduction of sodium bicarbonate according to Jutte's method. The duodenum is reached rapidly, and by means of an ordinary glass syringe the barium emulsion is aspirated first and then the duodenal fluid; the small quantity of the former which remains in the tube in no way interferes with the ultimate investigations. The method is valuable both from a clinical and therapeutic standpoint.

As a rule, the duodenal contents consist of the duodenal juices, bile, and pancreatic juice, but by injecting 25–30 c.cm. of a 25 per cent. solution of magnesium sulphate contraction of the gall-bladder ensues and at the same time relaxation of Oddi's sphincter. Bile thus obtained may be of normal aspect or thick and dark, indicating the presence of cholecystitis, or containing a large quantity of mucous flakes, evidence of catarrhal jaundice. Fine sand points to biliary lithiasis, while a definite amount of blood suggests the presence of a growth either in the duodenum, biliary passages, or pancreas, and especially in the latter organ if the liquid is colourless, and there has been no colic and if pancreatic ferments are absent. Microscopic examination of the extracted fluid sometimes discloses the presence of a large quantity of polynuclear leucocytes with red corpuscles associated with mucus and cellular elements and various micro-organisms; such a condition indicates some inflammatory process, cholecystitis or choledochocystitis either simple or calculous if there are many cholesterin crystals seen. In catarrhal jaundice there may be an enormous quantity of epithelial cells accompanied by polynuclears and cylindrical cells of the biliary ducts. Chemical examination will show that there is complete absence of urobilin in obstructive jaundice, while on the other hand, it is increased in cases of abnormal destruction of red cells such as in hæmolytic jaundice, pernicious anæmia, and malaria. Usually the amount of albumin in the bile varies largely from case to case, and also in individuals who subjectively and clinically may be considered normal, and even varies in the same individual, according as the bile comes from the gall-bladder or biliary passages. Although some observers have claimed that the presence of a definite quantity of albumin is an indication of inflammatory processes of the bile passages, and particularly of catarrhal jaundice, Prof. Trossarelli's researches seem to show that the presence of albumin in the bile is an unsolved problem as an element of diagnosis and cannot be relied on in the absence of other symptoms. In fact, there are individuals who have never suffered from any kind of gastro-intestinal or hepatic disturbance whose bile contains as much albumin as those suffering from jaundice of various kinds. Examination for the presence of pancreatic ferments, diastase, trypsin, and steapsin has failed to afford any definite diagnostic help, partly because the duodenal fluid rapidly loses its fermentative power, whether kept in ice or in a thermostat at 37°C., and partly because the presence of bile largely increases its activity. It is only with the greatest circumspection that it is possible to admit a functional debility of the pancreas in the sense of a diminished excretion of ferments based on a quantitative examination of these substances in the duodenal juice.

Catheterisation is also useful in treatment, since by means of the tube various remedies can be brought into contact with the duodenal mucosa without having to pass through the stomach. One method of treatment which has given good results, particularly in cases of cholecystitis, hepatic calculus, ulcerative colitis, and in some cases of ankylostomiasis, consists in free duodenal lavage with astringents and antiseptics. Among the substances which have been used beneficially may be mentioned argyrol and protargol in 0·75 per cent. to 1·5 per cent., nitrate of silver 1 in 20,000, sulphate of magnesia and Jutte's solution, the latter composed of 0·9 per cent. sodium sulphate and 0·9 per cent. sodium chloride, using 1 to 1½ litres for a lavage. Excellent effects seem to have been obtained by these methods, resulting in the elimination of large quantities of biliary sand and even small calculi with disappearance of symptoms. In other cases, individuals suffering from intermittent fever of obscure origin, where after catheterisation the duodenal fluid was found to contain bacilli belonging to the paratyphoid group, a complete cure was obtained after two or three washings. This method has also been used with solutions of novarsenobenzol in syphilis and emetine in amœbic dysentery. Recently Bottner and Verner practised duodenal lavage with decoction of linseed and 5 per cent. magnesium sulphate in patients affected with pernicious anæmia. Out of six subjects treated they obtained clear improvement in five of them. Prof. Trossarelli's observations and researches demonstrate the great importance that duodenal catheterisation may acquire in the diagnosis and treatment of certain diseases of the liver, bile-ducts, pancreas, and duodenum. When technical difficulties have been overcome it will doubtless obtain its fitting place in practical medicine.

HOSPITAL PROVISION FOR CHRONICS.

NOT long ago Dr. E. P. Boas, medical director of the Montefiore Hospital in New York, brought to the notice of the New York Academy of Medicine the problem of the hospitalisation of the chronic case. There are, it appears, few institutions in New York where adequate care is given to the treatment of chronic disease, and at existing institutions there is little if any differentiation made between cases simply requiring custodial care and those which would respond to specialised medical and surgical treatment. The subject is further dealt with in a report by the Public Health Committee of the Academy which has just reached us. The type of case for which the New York hospitals under present circumstances do not arrange includes the various rheumatic diseases, cardiac and visceral troubles of many kinds and degrees, mucous colitis and other gastro-enteric diseases which do not readily respond to home treatment, disturbances of the neuro-muscular system, renal affections and the large group of orthopædic cases. Shelter is provided for those who have reached the incurable stage, but the need is felt for the care of those who are not yet hopeless. The staff should

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[1] Il Policlinico, Surgical Section, April 15th, 1925.

(4) the reservoir of the virus, or big game. "I do not hope for much," he said, "from the labour of the International Conference. Such a conference seems to me to be premature. I cannot believe that its efforts are likely to advance knowledge, and we hardly know enough at the present time to formulate regulations governing the international frontiers in tropical Africa. In my judgment much more is to be hoped from an inter-colonial conference and from the coördinated and sustained effort which it would be in the power of such a conference to ensure." The main difficulty, as he pointed out, which at present bars the way of progress in the investigation of the ravages of the tsetse-fly, is that energy is often misdirected; first, in that reports from isolated investigators frequently omit some essential information and thus do not permit of any inferences being drawn; and secondly, in that work, admirably conceived and executed, is often brought to naught by the fact that those who are conducting it go on leave without arrangements being made to carry it on. Further, it is sometimes difficult to realise the natural difficulties in the shape of marauding big game with which lonely investigators, inadequately supported by funds and personnel, have to contend, and Prof. Yorke is emphatic that the only hope of success is by substituting for isolated workers, whether entomologists or pathologists, large and well-equipped commissions having real funds at their command. He again urges, as he did five years ago at the first Entomological Conference, that entomological, medical, and veterinary research into the trypanosomiasis problem should be combined under one central organisation, supported by pooled contributions from all the African colonies interested, with adequate precaution to ensure continuity of work. Only by concentrating energies can experimental work be undertaken on a scale large enough to determine the relationship of fly and trypanosomiasis to game, and to solve the various problems enumerated in the report of the Glossina Sub-committee of the Imperial Bureau of Entomology. Prof. Yorke's stimulating criticism will, no doubt, receive respectful attention.

THE CHARCOT CENTENARY.

A social evening of the Royal Society of Medicine was held on June 15th at 1, Wimpole-street, in celebration of the centenary of the birth of Jean Martin Charcot. Sir StClair Thomson, the President, in his prefatory remarks extended an especial welcome to several colonial and foreign guests who were present, and read a letter of appreciation to the Society from the Académie de Médecine of France. Dr. Farquhar Buzzard, President of the Section of Neurology, then gave a paper on the great French neurologist. After briefly indicating the milestones in Charcot's life, Dr. Buzzard said any spectator of the recent centenary celebrations held in Paris could hardly fail to wonder what manner of man this Charcot was, who still held, 32 years after his death, the esteem, the gratitude, and the affection not only of his professional pupils and successors, but of his countrymen at large. At a reception in the amphitheatre of La Sorbonne, at which the President of the French Republic was present, the proceedings were enthusiastically followed by an audience of between two and three thousand people, the majority of whom were not medical. From all corners of the earth pilgrims had come to listen and to add to the eulogy of the great neurologist. It was, he said, perhaps the most wonderful tribute ever paid to any medical man—not as a scientist, not as the author of some epoch-making discovery conferring lasting benefits on humanity, just a physician whose work and personality had made an imperishable impress on the science and art to which he had devoted his talents and his life. And, he added, it would be difficult to visualise our public and our Government joining so whole-heartedly in commemorating the birth of even a Jenner or a Lister; it might be doubted whether any medical man had ever been to any country what Charcot had been—and still was—to France. He continued: "Here was a man who, having been appointed quite early in his career chief physician to a large infirmary, the Salpêtrière, spent his life and energies in the service of the institution with the result that from being a building of merely historic and charitable interest it became the foremost school of neurology in the world. And yet Charcot has no great discovery to his name. The enormous amount of material which lay ready to his hand and which illustrated every form of advanced disease he studied not only in minutest detail, but with the artist's flair for accurate observation, for picking out essentials, and for giving them their due perspective. In an era devoted chiefly to the collection of pathological specimens and clinical observations he was second to none of his contemporaries as a collector, and he excelled all in his marvellous gift for marshalling the results of his labour and for giving them graphic presentation whether by pen or by word of mouth. It is not mere patriotism which makes us hesitate to place him beside Hughlings Jackson as a deductive philosopher, but we can boast of no physician who, in addition to making countless contributions to scientific knowledge, can compare with Charcot in his ability to attract students from all over the world by means of his inspired gift for exposition." To give orientation to Charcot's life and work it must be remembered that he was about 20 years younger than Duchenne, of Boulogne, who might rightly be regarded as the founder of French neurology. Duchenne and Charcot were to French neurology what Laennec and Trousseau were to French medicine as a whole. It might almost be said that Duchenne and Charcot discovered and entered a new field in which a rich harvest lay ready for the gathering. Dr. Buzzard then gave many intimate and vivid glimpses of Charcot at home and in hospital, and showed on the epidiascope several interesting portraits, including the centenary medallion, after the design of Mons. F. Vernon, the author of the Osler plaque. He also showed examples of Charcot's skill as a draughtsman and as a caricaturist.

The Centenary Medallion.
Reverse: Centenaire de la Naissance de J. M. Charcot, 1825–1925.

A vote of thanks to the lecturer was moved by Sir David Ferrier, who had himself been a pupil of Charcot over fifty years ago in the Salpêtrière. He referred to his master as one who had made an old poor-house ward into the most visited and most famous clinic in the world. A feature of the evening was the display, in the library, of books, documents, and drawings relating to Charcot and his work which had been prepared by Mr. Walter G. Spencer, the librarian. To his labours Dr. Buzzard paid a special tribute, and expressed the hope that the valuable collection which had been assembled might reach a wider public in some permanent form.

Sir James Berry was among those admitted to the honorary membership of the Inter-State Post-Graduate Assembly of America on June 4th.

Arrangements for the International Congress of Radiology, to be held in London on July 1st to 4th, are now complete. Details of the advance programme will be referred to in our next issue.

joints is overcome by passive stretchings and active exercises, perhaps assisted by tenotomy of the flexor tendons In deformed toes associated with hallux valgus the excision and tenotomy methods as described for hammer-toe may be carried out on those toes which are causing painful disability

In retentive splintage after correction, when the toes need to be held flexed in the metatarso-phalangeal and extended in the more distal joints, the sealed dressing and looped sole plate methods described above are more practicable than the use of plaster-of-Paris in which it is difficult to obtain precise correction without risk of producing pressure sores

W H Trethowan, F R C S Eng,
Orthopaedic Surgeon to Guy's Hospital

Special Articles.

THE MILK-SUPPLY AND ITS IMPROVEMENT.

By William G Savage, B Sc, M D Lond,
County Medical Officer of Health Somerset

III *—Remedies to Improve the Milk-Supply

The final report, issued in 1919, of the Committee on the Production and Distribution of Milk, emphasised what all authorities on the subject are agreed upon, that the present milk supply is highly unsatisfactory Since that date the only Act passed affecting milk has been the Milk and Dairies (Amendment) Act, 1922, which in most essentials leaves the problem alone In addition to questions of chemical purity, which cannot be dealt with from limits of space there are three different bacteriological problems—i e, freedom from tubercle bacilli, general bacterial cleanliness and removal of the liability to spread acute infectious disease With so many problems it will be obvious that there can be no simple short cut to a satisfactory supply, but that it is a problem which must be surveyed from many angles

More Effective Legal Control

The need for additional legal powers has been demonstrated in the previous article There is however, another Act upon the Statute book the Milk and Dairies (Consolidation) Act, 1915 This is a unique measure, since (with some modifications) it is a repetition of and substitution for the Milk and Dairies Act, 1914, which although passed, never came into force, and, like it, the 1915 Act has been postponed and has never come into operation The 1922 Act further extended its date of coming into force to Sept 1st 1925 This Act has been kept in cold storage for ten years, and there is nothing to prevent a further Act from still further extending the period of hibernation

From the point of view of the milk reformer this Act cannot be accepted as likely to solve all the existing milk deficiencies On the other hand, it contains a number of valuable and important sections The mother Bill was in the end an 'agreed' measure An 'agreed' Bill in the sphere of public health usually means that to get it passed many of the best clauses have either to be withdrawn or accepted handicapped with safeguards which make them unworkable or so slow in operation that they fail to do much good It is cumbersome in working, since it gives both the smaller local authorities and county councils powers which are in part concurrent Its chief value is in Section I which gives the Ministry of Health power to make Orders which, if fully made use of, would go a long way legally to ensure clean milk These powers are coupled with the 'safeguard' that they have to be made with the concurrence of the Board of Agriculture and Fisheries These powers are, therefore, very much in the nature of a dark horse of possibilities but hardly a certainty perhaps not a starter The need for a new Milk and Dairies Order to control method in milk production has been amply demonstrated in my last article and under Section I of the 1915 Act an effective Order is possible The Draft Milk and Dairies Order, 1915, proposed to be made under the Act was very valuable and it is to be hoped that any Order issued will be along the lines of this Order with additions dealing with methods of clean milk production

While education is more important than legislation *in connexion with an improved milk supply, more* definite legal requirements as regards milk production and handling are in themselves of great educative influence when tactfully carried out No experienced milk reformer wants drastic enactments, and the essentials are very simple things Too zealous workers have done much harm, and led agricultural interests to take fright at what are to them, and indeed in reality, impossible requirements If, however it is right to require cows' udders to be clean and milkers to have clean hands and to milk in cleanly fashion, and for churns to be sent locked, why not say so legally and have done with it? There is no dispute as to the essentials

In my opinion it is for the medical profession to press for better control either by the passing of a suitable Milk Act or, failing that by no further postponement of the operation of the 1915 Act It is impracticable to discuss all the sections of this Act, but as regards tuberculosis they demand a little more consideration

The Prevention of Human Tuberculosis from Milk

Everyone who has made a study of the problem of the eradication of bovine tuberculosis is aware of its extreme complexity and difficulty, in part due to its magnitude in part to the large financial interests involved in part to the fact that it concerns two Government departments looking at the problem from different angles Fortunately it is equally obvious that it is a solvable problem, while it is agreed that progress can be achieved along several lines It is an agricultural even more than a public health question and while the two are not identical they are interdependent It is impracticable to discuss these lines of progress and remedies in detail here, and, indeed, they would involve a very large number of purely technical considerations Fortunately there are many valuable papers available on the subject

Just as with human tuberculosis it is obvious that drastic measures are impracticable and would defeat their object, and that progress can only result by advancing along definite and approved lines The two most approved lines have been (*a*) the thorough separation of healthy from tuberculous animals and the rearing of a healthy non-infected herd, (*b*) the elimination of cases of open tuberculosis in bovines as the cases which most spread the disease and mainly infect the milk supply

Experience has shown that much can be effected along these lines Judging from past legislation the most probable lines of administrative action will be a re-enactment of the 1914 Tuberculosis Order, together with the tuberculosis clauses of the 1915 Act These clauses in the 1915 Act, if they become effective, will give a good deal of power, but they seem complicated in working and, while they may prevent some infection from tuberculous milk, will do little to reduce the amount of bovine tuberculosis Their greatest hope in this direction is in the power they give for the appointment of whole time veterinary inspectors and for bacteriological examinations The Tuberculosis Order of 1914 is an Order of the Board of Agriculture which was suspended at the onset of the war and has not been re-enacted In the words of the covering circular, the Order aims at securing the destruction of every cow found to be suffering from tuberculosis of the udder, or to be giving tuberculous milk as well as of bovine animals which are suffering

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* Parts I and II appeared in The Lancet of May 23rd and 30th and June 6th respectively

PROCEEDINGS OF THE ROYAL COMMISSION ON NATIONAL HEALTH INSURANCE.*

EVIDENCE OF THE BRITISH MEDICAL ASSOCIATION

(continued from p 1250)

The Right to Admission to the Panel

(Q. 15214) The witnesses said that they would strongly oppose any limitation on the right of a registered practitioner to enter the insurance service, whether the present general practitioner service or the proposed extended service of consultants and specialists (assuming in the latter group that the doctor had the necessary status) Dr Cox said that the statement made by a previous witness before the Commission that the Association had agreed to such a limitation was wrong and must have been made under a misapprehension

Regulations

(Q 15216–20) *With regard to the suggestion in the evidence that complaints should in the first instance be submitted to the chairman of the local medical committee and the chief administrative medical officer of the area it was asked whether this would not place the decision of these questions too much in the hands of the profession, and whether some lay element was not desirable* Dr Brackenbury said that if questions of behaviour as between doctor and patient were eliminated from the complaints procedure and regarded as covered by the freedom which now exists for the doctor or patient to terminate the relationship at any moment, the inclusion of a lay element, even in the court of first instance, would not be objectionable

Dr Bolam said, with regard to regulations generally —

(Q 15216) The profession as a whole feels very strongly (and in particular those outside the Insurance Scheme at present feel that if they are to participate in it at any future time) that it is necessary that any regulations shall only be in regard to administrative procedure and the arrangement of it, and not anything which would interfere with the mode of treatment given by the doctor or the relationship between the doctor and patient in a medical sense

There had been a tendency on the part of the Ministry of Health recently to interpret the regulations in a manner which gave rise to apprehensions

On another aspect, Dr Brackenbury said .—

(Q 15220) Where the machinery agreed upon for judicial inquiries has been complied with—when the Insurance Committee has adopted one particular decision it seems to us entirely improper that the court of appeal the Ministry—should step in and write a letter to that Insurance Committee suggesting they should alter the charge and proceed differently

Medical Institutions

(Q 15221 15296) With regard to medical aid societies and other approved institutions, Dr Cox explained that it was not so much the fact of payment by salary which was objected to as the control of a lay committee He said '—

I do not know of any lay committee which has the employment of medical men, with so little sense of real public responsibility as the committees of these particular services It is a very different thing for a medical man to be employed by a public authority—a responsible public body—and to be employed by a body connected with one of these institutions the calibre of which cannot be at all the same, and over which there is nothing like the same amount of public check We are against these institutions because we know they do not get the quality of medical men which is prevalent in the ordinary panel system

As regards the institutions in the colliery areas of South Wales, he said —

I have no hesitation in saying that there their influence has been very detrimental indeed to the medical service given to the public in those areas For nearly 30 years—long before the Insurance Act came in—we have been fighting these institutions, because they proceeded on what we thought were entirely wrong lines the theory being that the miner who is of course, a very politically minded person and who believes that he is able to manage services of all kinds thought that he could manage the doctor They deliberately adopted the idea of the employment of a doctor as a whole time servant, who should be the doctor of the committee and not the doctor of the individual person which we think is wrong, it is fundamentally against the provisions of a good medical service

The Proposed New Authority

(Q 15297–300) The Association suggested that cash benefits should be separated from treatment benefits and the latter administered by a new authority which would control also all other health services The profession would be satisfied that the new authority should be a statutory committee of the county council or county borough council, though these would not be always in their present form the best areas for the purpose.

(Q 15299) *The proposal, then, would mean the disappearance of the Insurance Committee and the unification under the new authority of the medical services at present administered by the Insurance Committee the public health authority the Poor law guardians, and the education authority As chief officer of the new authority you would have an administrative medical officer of high standing both in medical knowledge and in administrative work, who I suppose would be a salaried officer?*—Yes

Dr Brackenbury pointed out, however, that they did not contemplate this engagement of salaried officers for treatment purposes at all, except for a limited period of time for tuberculosis and venereal disease services and for infectious diseases hospitals. Their general view was that —

(Q 15300) The actual treatment work as distinguished from administration, or we may even say inspectorial work would be done by part time officers either on the insurance system for domiciliary attendance or on the sessional system for the treatment clinics The necessity for many of the treatment clinics will be done away with by the provision of the family doctor for the dependants of the insured person

(Q 15305) As regards the financing of the enlarged health service, the funds would be derived, it was thought, from the same sources as at present, but not all pooled The income from the insurance scheme would be preserved as a separate fund, the new authority receiving a capitation payment in the same way as the insurance committees do at present

The general scope of the extended scheme proposed by the Association would be found not inconsistent with the main lines of the proposals of the Consultative Council to the Minister of Health in 1920, but corresponded rather more closely to the Scottish than to the English report

Certificates of Incapacity

(Q 15310–11) The words "incapable of work" on the certificates gave rise to much difficulty, and the words "unfit for your work" would be more suitable, with a provision that when the Approved

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* In previous articles the proceedings of the Commission were reported under the following headings Introductory Note The Scope of the Insurance Scheme (see THE LANCET Jan 31st pp 247 8) The Provision of Medical Benefit (Feb 7th pp 301–3 Feb 14th pp 355 6 Feb 21st pp 403–5) Financial Provisions of the Act (Feb 28th pp 461–7) Medical Certification and the Regional Medical Staff (March 7th pp 508–9) The Approved Societies and the Money Benefits (March 14th pp 561–5, March 21st pp 623–4), Evidence of the Hearts of Oak Society (March 28th pp 677–9) Evidence of the National Conference of Industrial Assurance Approved Societies and of the Manchester Unity Approved Society (April 4th, pp 731 3) Evidence of Independent Order of Rechabites of National Association Friendly Society, and of Miners Societies (April 11th pp 784–6 April 18th p 839) Evidence of Mr Alban Gordon (April 18th pp 839 40) Evidence of Joint Committee of Approved Societies, of Stock Exchange and Lloyds Health Insurance Societies and of Group of Catholic Approved Societies (April 25th, pp 883 91) Evidence of the National Insurance Beneficent Society (May 2nd, pp 913–4) Evidence of the British Medical Association (May 9th pp 993–5), Evidence of the British Dental Association and other Dental Organisations (May 16th, pp 1044–6), Evidence of the Insurance Committees (May 23rd pp 1097–8) Evidence of Various Approved Societies (May 30th, pp 1135–6), Evidence of the British Medical Association (June 6th pp 1184–6, June 13th pp 1248–50)

References to the paragraphs in the printed statements issued as appendices to the reports of the oral evidence are given thus "App A 69" and references to the oral evidence thus—Q 1369

tuberculosis, diarrhœa, and other diseases sent to them by the health committee. A band of 60 voluntary workers, mostly British Red Cross, do excellent work in assisting at the child welfare centres. In February, 1923, an X ray apparatus was purchased for the tuberculosis dispensary and pneumothorax treatment was begun. A sanatorium school for pre-tuberculous children and a scheme for the prevention and treatment of crippling were put into operation during the same year. New lairage accommodation has been provided at the public abattoir and the number of private slaughter-houses has been reduced from ten at the end of the war to two in 1924. The farms in the borough have been modernised. "Certified" milk has been on sale since 1921 and the demand for it is constantly increasing. "Grade A" milk is obtainable from three farms and the demand exceeds the supply. Three "clean milk" competitions have been held. A covered milk container with a tap at the bottom has been devised and is in use in milk sale shops. Parliamentary powers have been obtained for the registration of premises where meat food products are prepared. A scheme has been adopted for improving the welfare of the blind by assisting the workers at the workshops of the blind and coöperating with the society for visiting the blind. In 1920 there were 9320 privies and pail-closets; all of these, except 174 in the suburbs of the town, have been converted into the ordinary water-closet. A scheme is now in operation for the substitution of galvanised-iron bins for ashpits. Attention has been paid to the hygienic condition of cinemas and other places of entertainment. A comprehensive scheme for educating the general public on how to maintain their health has been in operation since the end of 1920. In connexion with this there have been exhibitions, many cinema and other lectures, health poster competitions, newspaper articles, health sermons, and other activities. One is not surprised that Dr. Daley congratulates his health committee and council on their policy.

Ipswich.

Dr. A. M. N. Pringle gives some particulars of the behaviour of the tuberculosis death-rate in Ipswich. From 1811 to 1870 the female death-rate from pulmonary tuberculosis exceeded the male, but from that time onwards it has been consistently and considerably lower. During 1921 and 1922 there was little difference between the two rates, but during 1923 and 1924 the female rate has only been two-thirds of the male. From 1810 up to the present time there has been very little difference between the male and female rates from non-pulmonary tuberculosis in Ipswich. The rate for cancer reached its highest recorded point in 1924, the male rate being 1·48 and the female 1·30. Another table shows the decline in infant mortality. From 1810 to 1870 the infant mortality-rate in Ipswich averaged about 170; from 1870 to 1900 it averaged about 150; during the three years 1922–24 it has averaged 52. A remarkable feature of the rate during 1924 was that there were no deaths of illegitimate children. The recorded births of illegitimate children numbered 61. Dr. Pringle points out that since 1915 diarrhœa has been "wiped out" as a serious factor in the production of infant mortality. The very high case-fatality of puerperal fever shows that all the cases are not being notified, and Dr. Pringle suggests the advisability of having all cases of puerperal pyrexia of 100·4° F. or over (maintained for 24 hours) notified. There is ample hospital accommodation for all cases of puerperal fever either in the East Suffolk Hospital or in the isolation hospital.

Ealing.

Dr. Thomas Orr reports that all the 14 midwives practising hold the certificate of the Central Midwives Board. The midwives are under the supervision of the county council, but they frequently refer cases to the borough maternity and child welfare centre. About 180 maternity cases from Ealing were admitted to the Chiswick and Ealing Maternity Hospital during the year and the contributions made by these patients amounted to £810 17s. 6d. Eighteen licences were granted to one milk company to sell "pasteurised" milk at their various premises; 19 licences were granted (18 to one company) to sell "Certified" milk; and one licence to sell "Grade A (tuberculin-tested)" milk. The housing difficulties still remain acute. Twenty-eight flats erected by the town council provided for some of the most urgent cases. In his school report Dr. Orr points out that the erection of the Grange School marks a recent development of school construction. In 1905 the schools built had a central hall with classrooms round it. The next development was a central hall with one outside wall and the classrooms arranged round the other three sides. The Grange School is a single range of classrooms in the form of the letter E with the central arm left out. Along the inner side of the building is a broad corridor with a glass roof and on to this corridor the whole of the classrooms open in such a manner as to form when required an open-air school. The two centre classrooms, by the folding of a glass and wood partition, can be converted into a large assembly hall. Dr. Orr states that the head teachers use every opportunity to teach in the open air when weather permits, and he regards the new Grange School as a noteworthy step in furthering open-air education.

Macclesfield.

Dr. J. Hedley Marsh mentions that there were nine notifications of encephalitis lethargica from February to August with three female deaths at ages 8, 13, and 71 respectively. A circular was issued during the year to all milk producers on the production of clean milk, based on an article by Mr. A. T. R. Mattick, of the Reading Institute. The report contains a large number of analyses of the town's water, many of which are not altogether satisfactory. A new impounding reservoir with a capacity of 134 million gallons has been begun.

Shrewsbury.

Dr. H. Gordon Smith makes his fifth and last report before taking over his duties at Lincoln. Shrewsbury has a dual water-supply. The drinking water is obtained from a deep well about two miles outside the borough, is pumped into a reservoir, and reaches the town by gravitation. It is supplied to the inhabitants by means of standpipes in the streets. The river water is laid on to the houses, but is not intended for drinking purposes. To minimise risk, however, this river water is chlorinated and filtered through Bell's pressure filters. Six cases of encephalitis lethargica were recorded, four being fatal. Dr. Smith claims that probably no other town of similar size to Shrewsbury has tackled the housing problem so seriously and so successfully. During 1924 107 houses were erected with State assistance, 54 by the local authority and 53 by private enterprise. The lessening of pressure actually enabled eight insanitary houses to be closed during the year.

Margate.

Dr. Rowan McCombe mentions that the question of public baths has been much discussed by the health committee and the Ministry. In the older parts of the town not only cottages, but many of the better-class houses have no bathroom. The need is for a simple type of building for the use of the occupants of the bathless houses. There are already swimming baths owned by a private firm. Margate is still faced with a deplorable shortage of houses. The council erected 84 houses in 1921, 52 in 1922, 22 in 1923, and none in 1924. A further 48 houses were, however, begun in 1924. Owing to the growth of the town it has been found necessary to devise means for dealing with the increased sewage and storm water. The scheme, which has received the approval of the Ministry, includes
sewers, large main sewers, pumping
engines, and storm overflow drains.
out well in the matter of hours of
with 1827·2 hours, as compared with

SCHOOL MEDICAL SERVICE.

Name of district.	No. on roll.	Av. elem. school attendance.	No. of routine children examined.	No. of special examinations and re-inspections.	Percentage of children found on routine examination requiring treatment.§
Warwickshire ..	37,800	*	11,031†	6,123	12·94‡
Holland C.C. ..	11,064	*	4,010	1,180	20·0
Bedfordshire ..	*	*	5,130	1,591	19·59

* Not given. † Secondary schools, 1316.
‡ Secondary schools, 17·6 per cent.
§ Excluding dental defects and uncleanliness.

Warwickshire.

The concise and numbered paragraphs in which the report on the school work is presented by Dr. A. Hamilton Wood makes for brevity and easy reference, but leaves the reader wishing that observations had been made on points of interest arising in the course of the work. No special inquiries or investigations have apparently been undertaken. The satisfactory method of employing the health visitors as school nurses is in force—satisfactory in that it helps to *coordinate the various health services,* prevents overlapping, and is a strong link in the chain of preventive medicine between the parents and the medical services generally. A full tabular statement is appended of the work individually carried out by the school nurses.

The percentage of defects in the secondary schools is greater than that found in the elementary schools, but this is more apparent than real, and is largely due to the inclusion of dental defects in the return for secondary schools. As has been found elsewhere, treatment is more difficult to obtain so far as tonsils and adenoids are concerned, as only 22 per cent. of secondary scholars obtained treatment as against 55·9 per cent. of elementary children. No school meals have been provided as "there has been less unemployment in the industrial areas as compared with two years ago." No mention is made of open-air classes or schools, though even in rural districts such classes have their advantages, and some such provision would seem to be indicated for the 30 cases of malnutrition referred for treatment, of whom only eight appear to have been treated at the clinic. We trust the education committee will see the necessity of making suitable provision for the treatment of crippling defects. Dr. Wood reports on the requirements of such a scheme which would deal with over 200 children known to be so suffering.

Apparently the committee are now considering the question of providing suitable educational

laid out in the report will be speedily adopted. There are comprehensive details on the cost of dental treatment. As the cost would entail 1/4th + 1/10th of a penny charge on the rates, and this includes the provision of a mobile dental outfit, one wonders why it has not been in being long ere this. Dr. Jennings's notes on diet of school-children are of interest; and he urges that elementary dietetics should find a place in the school curriculum. We might also add propaganda amongst parents. No facilities exist for the provision of school meals and there are no *open-air, physically defective, nor mentally defective* schools in the area.

There were a great number of school closures, and in view of the memorandum on "Closure of and Exclusion from School" issued by the Ministry of Health and the Board of Education, 1925, they would appear to be excessive, notwithstanding that this is a rural area.

Bedfordshire.

The percentage of defects found is close to the average for the whole country. The proportion of parents present at routine examinations was high—65·7 per cent. Dr. R. T. Herdman comments on the great value of this factor, "For five minutes talk with a mother about the health of her child has a far greater effect than any number of letters advising her what should be done," although it takes longer to examine a child when one has at the same time to point out to the parent any defect found and explain its effect on the health of the child. In this connexion it should be noted that the whole of the medical inspection is carried out by the school medical officer himself, so that the scope of his activities is more limited than he would no doubt desire.

The arrangements for treatment are not detailed, but the percentage of all defects treated, excluding verminous conditions, is good—72·21 per cent. Spectacles were supplied in 71 per cent., though it is remarked that in agricultural occupations glasses are not always felt to be as essential as in urban employment. There are a considerable number of children suitable for special education—viz., 103 mental defectives and 31 physical defectives—still in elementary schools or receiving no education at all, and though in these scattered rural areas special provision is manifestly difficult, yet we would hope that something more may be done in the near future. The dental work is evidently carried out under some difficulties which would be greatly lessened by the establishment of central clinics.

Reading between the lines of the whole report, we get the impression of a task carried out with scarcely adequate facilities in a very human and sympathetic spirit.

THE OSLER MEMORIAL AT OXFORD.

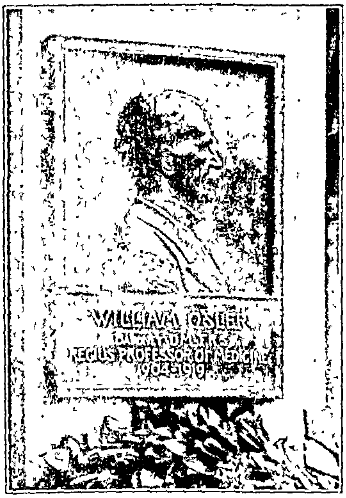
A BRONZE plaque in memory of Sir William Osler, late Regius Professor of Medicine, was accepted on behalf of the University and unveiled by the Vice-Chancellor, Mr. Joseph Wells, Warden of Wadham, on June 10th, in the Court of the University Museum, in the presence of a large and representative gathering. Among those present were Lady Osler; Sir Charles Sherrington, President of the Royal Society; Sir Archibald Garrod, Regius Professor of Medicine in the University of Oxford; Sir Humphry Rolleston, President of the Royal College of Physicians, and Regius Professor of Physic in the University of Cambridge; Dr. J. G. Adami, Vice-Chancellor of the University of Liverpool (representing McGill University); General Sir William Leishman, Director-General, Army Medical Service; the Master of University, the President of Corpus and Mrs. Allen, the President of Magdalen and Lady Warren, the Dean of Christchurch, Dr. Ainley Walker, Dean of the Medical Faculty, Prof. E. B. Poulton, and Prof. Arthur Thomson. The plaque, which has been affixed in the University Museum by permission of the delegates, is the work of Mons. F. Vernon, a French sculptor, and is a replica of that made for the Faculty of Medicine of Maryland, U.S.A. It was presented to the University on behalf of the subscribers to the Sir William Osler Memorial Fund by the President of Magdalen.

Sir Herbert Warren spoke in terms of much warmth and feeling of the services of Sir William Osler to Oxford and to medicine, and of the charm and inspiration of his personality. He referred briefly to the remarkable growth and development of the School of Medicine and its scientific departments, since the time when Sir Henry Acland set to work to devote himself to the restoration of an almost derelict school. By their genius and enthusiasm he, and his successor, Sir John Burdon-Sanderson, infused new life into the school and launched it on the fresh career of usefulness to which the late Regius professor so largely contributed.

The Vice-Chancellor, in unveiling the beautiful plaque, said it was a very great personal pleasure and honour to him to accept the memorial on behalf of the University. There were many who knew Sir William Osler as a name of authority in medicine; but here he was remembered even more for his never-failing kindness, his sympathy, his love of children, and his magnetic personality. He was not only a great man, but a most lovable one. It was very fitting that his memorial should stand in a place connected with so many great men of Oxford, and especially of Christ Church, his own college.

A wreath of laurel and white heather was then placed at the foot of the memorial by Mr. J. F. Fulton, Magdalen and Harvard, on behalf of the Inter-State Post-Graduate Assembly of American Physicians and Surgeons.

Sir Humphry Rolleston paid an eloquent tribute to Sir William Osler's life and work which adorned so many departments of learning: "Osler's services to medicine, like the man himself," said Sir Humphry Rolleston, "were remarkable for their infinite variety; his activities were not mainly confined, as have been those of some heroes of our profession, to one field, such as laboratory research, clinical observation, teaching, or education; he played a prominent part in all these spheres. Osler first made his mark as a microscopist—in an investigation of the Canadian Diatomaceæ, then of the blood platelets, and somewhat later of the malarial parasite; and as a morbid anatomist at McGill, Montreal, he laid the firm foundations of that sense of proportion so essential for a physician. As a clinician he established new syndromes, such as erythræmia (Vaquez-Osler disease), hereditary telangiectases, splenic anæmia, and pointed out certain symptoms or signs in recognised diseases, so that 'Osler's nodes' in subacute bacterial endocarditis are familiar. The most modern methods of the laboratory were fully utilised to supplement the routine and thorough examination of the patient, the new and the old being skilfully blended so as to obtain the best of both. Like Trousseau, he ranged widely over the whole field of medicine and enriched it both by observation and by deductions based on collected statistics; his literary output in 49 years amounted to more than 770 books, papers, and addresses." Sir Humphry Rolleston dwelt on Osler's inspiring influence, owing to his perpetual youth in mind and wide sympathy and knowledge of young men, teaching them not medicine only, but humanity and the way of life. "Ever active in the wards," the speaker continued, "Osler's influence stimulated others to individual observation and research and so to advance the science and art of healing. His writings, especially his great text-book, remarkable alike for its conciseness, completeness, and atmosphere of personal experience, brought him numberless followers whom he had never met. A happy manner of persuasive enthusiasm admirably fitted him as a great leader in campaigns for the prevention of diseases, such as enteric fever, malaria, tuberculosis, and venereal infection, and he not only originated, but carried through successfully schemes for the benefit of the nations. His most remarkable success, however, was as an educator of the medical profession; this was largely due to his personality and to the way he put into effect his motto 'Write me as one that loves his fellow men.' A great believer in the educational and harmonising influence of medical societies and in united effort, he was the moving spirit in starting the Association of Physicians of Great Britain and Ireland, and for its first 12 years the senior editor of its official organ."



Sir Archibald Garrod proposed a vote of thanks to the Vice-Chancellor for presiding on the occasion, and referred to the position happily chosen for the memorial in close proximity to the statue of Sydenham and near the figures of Harvey, Hunter, Acland, and Burdon-Sanderson.

THE OSLER MEMORIAL FUND.

By a recent Decree in Convocation the University of Oxford has gratefully accepted the Fund subscribed in memory of the late Regius Professor of Medicine, and has made the following regulations for its administration.

engaged in investigating the causes of anæmia among the people of Malaya, Java, and Fiji From 1918 to 1920 he served as professor of hygiene and director of laboratories of hygiene in the Medical School of Sao Paulo Brazil Since that time he had been director of a field laboratory for research studies in malaria located at Leesburg Georgia He was recently appointed corresponding member of the Malaria Commission of the League of Nations At the time of his death he was travelling with the Commission which was investigating the prevalence of malaria in Palestine and Syria

Dr Darling was an honorary Fellow of the Royal Society of Tropical Medicine and Hygiene, London, he and General Gorgas being the only Americans so honoured He had accepted an invitation to deliver the annual address to the society next month He was also a Fellow of the American Medical Association and a corresponding member of the following organisations Helminthological Society, Washington, D C, the Malaria Commission of the Health Section of the League of Nations, Société de Pathologie Exotique de France, and Sociedade de Medicina e Cirurgia de Sao Paulo, Brazil. He was president of the American Society of Tropical Medicine for the year 1924 25 His published works include important contributions to our scientific knowledge of malaria, relapsing fever, dysentery, and parasitic diseases, particularly hookworm disease, filariasis, and trypanosomiasis

THE BATEMAN APPEAL.

As already explained in THE LANCET, it has been felt that material assistance ought to be offered to Dr Bateman to meet the legal expenses of his successful appeal and to make good the deficiency in his professional income Accordingly the Bateman Fund has been opened and lists of contributions have appeared in recent issues We have received additional contributions as follows —

	£	s	d
Already received and acknowledged	473	13	6
Dr A F Hurst	[illegible]	[illegible]	0
Dr E A Coward	1	1	0
Dr A Ross	1	1	0
Dr J W Carr	1	0	0
Anon	0	10	[illegible]
Dr J A Ikals	0	5	0
	£182	16	0

Remittances should be *forwarded to the* Manager of THE LANCET, 423, Strand, W C 2, and made payable to the "Bateman Fund Account"

RUTHERFORD MORISON TESTIMONIAL

THE following is the third and final list of subscriptions to this Fund, the grand total of which, including subscriptions promised, amounts to £1528 —

Third Subscription List

£52 10s —Prof C Saint (Newlands, C P)

£15 15s —Dr Mary S Gordon (Johannesburg)

£10 10s —Prof R P Rankin Lyle (Newcastle), Dr W Frank Wilson (Newcastle) Mr F C Pybus (Newcastle), Mr T A Hindmarsh (Newcastle) Mr J Collingwood Stewart (Newcastle)

£5 5s —Dr J S Arkle (Newcastle) Dr O W Ogden (Newcastle) Dr G A Atkinson (Newcastle) Dr P R Ingram (Muswell Hill), Mr A Hedley Whyte (Newcastle) Dr D A Dewar (Stanley) Mr C W MacGillivray (Edinburgh) Dr F Craig Dunlop (Carlisle) Mr J W Leech (Newcastle) Mr I J Nattrass (Newcastle) Prof R Howden (Newcastle) Dr McAleenan (Blaydon) Dr A Parkin (Newcastle) Dr R Dagger (Newcastle) Dr Mary E Howie (Newcastle) Dr George Hall (Newcastle) Dr C G Irwin (Tynemouth), Dr R W Nevin (Newcastle) Dr D Wells Patterson (Newcastle) Mr J D Wardale (Newcastle)

£5 —Mr Harvey Evers (Newcastle) Dr R Wilkie Smith (Whickham)

£4 4s —Dr A R S Jack (West Hartlepool) Dr E F T Hare (Durham)

£3 3s —Dr Ritson (Hexham) Dr W J Phillips (Forest Hall) Mr J. Brumwell (Newcastle) Mr W I M Wardill (Newcastle) Dr J M Gover (Gosforth) Dr Norris (Gateshead) Dr J C Grant (West Boldon) Dr G F Stephenson (Newcastle) Dr J I Chapman (Hartlepool), Dr I G Modlin (Sunderland)

£2 2s —Dr Hedda Alstron (Chipperfield), Dr A C Jap (Singapore) Dr W Herbertson (Newcastle), Dr I Donaldson (Selukwe, S Rhodesia), *Dr H D MacPhail* (Newcastle), Dr H C Coxon (Leamington), Dr W Kerr Russell (Newcastle) Mr H Frankling (Harrogate) Dr G I Lloyd (Hexham) Dr T N V Potts (Newcastle) Dr C C Robertson (Darlington) Dr C G R Goodwin (Barnard Castle), *Dr P Holgate (North Shields) Captain* J A Charles (Stanley) Dr A Dryden (Newcastle) Dr J W Gibson (Newcastle) Dr W Tattullo (Spennymoor), Dr W Hudson (Bedlington), Dr Langenberg (Houghton le Spring) Dr A Livingston (Newcastle)

£1 1s Dr H Widdas (Shildon), *Dr P Vernon Anderson* (Shildon), Dr Janet A Vaughan (Kashmir) Dr O Callaghan (South Shields) *Dr Hamilton* (South Shields), *Dr J A* Mackay (Newcastle) Dr F F Colville (Newbiggin) Dr I F Browne (London) Dr R H Fishman (Felling) Dr Whitley (Newcastle) Dr M Maclean (Ashington), Dr H S Brown (Choppington), Dr F D Silverston (Preston), Surgeon *Commander G O M Dickenson (London) Dr* J H Hunter (Middlesbrough) Dr J B Alderson (Ryhope) Dr H N Ingram (South Shields), Dr William C Haswell (Stannall) Dr A I Lloyd (Lenshaw), Dr Herbert Christal (Hoxne) Dr Mary Douglas (Newcastle), Dr R Ford Tredre *(St Blazey) Dr Bendl (London) Dr* G Howell (Newcastle), Dr James Smith (Newcastle) Dr A B MacPherson (Sunderland) *Dr Helen C Buckell* (Shipley) *Dr* Milbanke (Sunderland) Dr D McArthur (Bury St Edmunds) Dr E R Pearson (Torquay), Dr Miller (Bellingham), Dr Ian Macdonald (Huelva Spain) Dr R A Welsh (Felton) Dr F H Kennedy (Pershore), Dr G A Mason *(Sunderland) Dr Catherine M Jones (Swansea),* Dr N A Eddlestone (Whitley Bay) Dr H R Smith (Newcastle) Dr H R Smith (Newcastle) (second donation), *Dr* Dickson (Hexham) Dr C J Nellan (Seaham) Dr W F Hall (Heaton) Dr K B Allen (Bathurst, West Africa) Dr W Smith (Gateshead) Dr A F Harrison, jun (Sherburn), Dr H C Rollin (Durham), Dr F L Crawhall (Durham), *Dr S K Young (Chester le Street), Dr Carina A B Lewis* (Thames N Z)

£1 Dr S A Shehid (Minia Egypt) Dr H McAllum (Inglewood, N Z), Dr W C Wardle (Middlesbrough)

10s 6d —Dr W H Davis (Low Fell), Dr Revie *(Ashington)*

10s —Dr Williams (Haltwhistle), Dr I E. Dawson Walker (Durham)

Subscriptions Promised but Amounts Not Specified —Dr Sally Allen (Newcastle) Dr S K Norris (New Brancepeth) Drs J and G Denholm (Meadowfield)

The Services.

ROYAL NAVAL MEDICAL SERVICE

Surg *Comdr I S Wilkinson and* Surg Comdr W Bastian are placed on Ret List with the rank of Surg Capt

I O Reilly and J Cusson to be Surg Lts

ROYAL NAVAL VOLUNTEER RESERVE

Surg Lt H O Martin to be Surg Lt Comdr

ROYAL ARMY MEDICAL CORPS

REGULAR ARMY RESERVE OF OFFICERS

Lt Col *F P Hewitt having attained the age limit of* liability to recall ceases to belong to the Res of Off

TERRITORIAL ARMY

Maj A P Watson to be Lt Col and to command the 11th (2nd Scottish) General Hospital, vice Lt Col (Bt Col) D F Graham vacated on completion of tenure

D I Greig to be Lt

To be temp Lts whilst employed as *Dental* Surgs Lts A P McClure (and relinquishes the rank of Lt.) and A Hughes

ROYAL AIR FORCE

P D Barling is granted a short service commission for three years on the active list as a Flying Officer

INDIA AND THE INDIAN MEDICAL SERVICE

Bhagwant Kishore Sikand, Des Raj Kajuria, and Arukkattu Rangaswamy Srinivasan to be Temp Lts

Capt S N Hayes has handed over charge of the duties of superintendent of *the District* Jail at Dera Ghazi Khan Maj J I James civil surgeon, Naga Hills officiates as Civil Surgeon Darrang, vice Lt Col W D Richie, placed on special duty, *Capt C H P Allan has been posted as* Supernumerary Civil Surgeon, Cachar, Lt E I Hottinger, civil surgeon, has been transferred to Mianwali Lt Col *G Hutcheson officiating* Inspector General of Civil Hospitals United Provinces has been nominated to be President of the Indian Provinces Medical Council vice Col A W R *Cochrane resigned*, Maj A S Leslie *on relief from* appointment of district medical officer South Canara, has been posted to the Government General Hospital Madras Maj R. G G Croly acts as First Surgeon General Hospital, and Professor of Surgery Medical College, Madras vice Lt Col E W C *Bradfield*

entitled to receive the diploma The following are the names and medical schools of the successful candidates —

Noel F. Adeney Cambridge and St Mary s, George Armitage, Leeds Geoffrey M L Barnett, Otago and Middlesex Arthur C B Biggs, Univ Coll , Cyril M Brophy, Univ Coll and St Bart s John D M Cardell, St Thomas s Guy O Chambers St Bart 's Harry K Christie, Otago and Guy s , Cecil C Coghlan, Sydney, Dublin and Guy s William M Cotter, Otago and St. Bart 's, Milton Geaney, Sydney and Guy s , Frank Hudson, Univ Coll , John A James, Sydney and Guy s Basil L Laver Guy s Vaman R Mirajkar, Bombay and St Bart 's, John R Nicholson Lalley, Bristol and London James B Oldham, Liverpool Cyril M Pearce, St Bart s Kenneth N Purkis Guy s Mohammed M Iliad, Cairo and St Bart 's, Andrew Rugg Gunn, Edinburgh and St Mary's, Ronald C Shaw Manchester, Maurice P Susman, Sydney, Middlesex and St Bart s , and Charles A Wells Liverpool

The diploma of Fellow was also conferred upon Max A Lautré St Thomas s who has previously passed the examination and has now attained the age of 25 years

Diplomas of Member were conferred upon Eileen S Morris Univ Coll , and Mark Pedersen Royal Free, who have now complied with the necessary by laws

INTER STATE POST GRADUATE ASSEMBLY OF AMERICA —At the conclusion of the London programme on June 6th the members of this Assembly proceeded on a three days' visit to the Midlands from Monday, June 8th, to Wednesday the 10th It is stated that owing to the number of visitors who wished to inspect Leeds over 600 out of the 700 delegates, a ballot was held in London previously, whereby the party was divided into three, each section visiting respectively Liverpool, Manchester, and Leeds

Liverpool —All the hospitals of the city were united in providing an extensive and varied programme The general principle was that the mornings should be devoted to visits to the hospitals operations demonstrations and clinical lectures being provided daily from 9 A M till 12 30 The Liverpool Medical Institution was used as a central bureau, where tickets and information were distributed each morning at 8 30 Much appreciation was expressed of the adequacy of the arrangements and of the excellence of the clinical material provided In a special degree the surgery of Liverpool aroused the approval of the visitors On Monday afternoon a united meeting was held at the Medical Institution From 2 to 4 there was a series of short papers on subjects of varied interest Prof Ernest Glynn spoke on Tumours of the Suprarenal Cortex and their relation to Virilism, Prof John Hay on High Blood Pressure Dr Dingwall Fordyce on the Hygiene of the Cripple Child and Dr R J Minnitt on Insulin in the Treatment of Post anæsthetic Complications The papers elicited well informed criticism After a brief interval for tea a series of instructive cases was shown, illustrating the surgery of children orthopædic work, skin diseases and other conditions of special interest Dr R W Mackenna demonstrated an excellent series of wax casts gathered together in the course of his dermatological practice Tuesday and Wednesday afternoons were given up to visits to outlying institutions, such as the Royal Liverpool Children's Hospital (Country Branch) at Heswall, the Liverpool Children s Open Air Hospital at Leasowe, and the City Sanatorium and Isolation Hospital at Fazakerley At Heswall Sir Robert Jones and his colleagues on the staff drew an appreciative audience to their beautifully situated hospital overlooking the Dee, while at Leasowe Dr T H Martin demonstrated the good results obtained in the treatment of surgical tuberculosis in children under the ægis of the Liverpool Child Welfare Association At Fazakerley the visitors were welcomed by Sir John Ulling, M D , and conducted round by Dr C Rundle, the medical superintendent, and Mr John T Morrison, the consulting surgeon Perhaps the greatest interest was aroused in the arc light department, and the results of treatment in the cases seen there An account of the visit would be very incomplete which contained no allusion to the civic reception given by the Lord Mayor on Tuesday evening at the Town Hall A distinguished gathering was addressed by the Lord Mayor and by Dr Charles Mayo The note of welcome was warmly responded to and feelings of appreciation generously expressed, not only of the scientific and medical work seen, but also of the Englishman s fine qualities of character and personality, above all his sense of the value of the things best worth having On Monday the "staffs of the Liverpool hospitals" were 'At Home" in the Walker Art Gallery, where many Americans found friends, whilst all enjoyed the fine collection of pictures

Manchester —The party visiting Manchester necessarily split itself up into sections, attending lectures and demonstrations in the matters most interesting to each On the three mornings visits were arranged to local hospitals including the Royal Infirmary, Salford Royal Hospital, Ancoats Hospital, and Crossley Sanatorium At the Royal Infirmary medical and surgical cases were shown, and among others the X ray, aural, and electrocardiographic departments were inspected On Monday afternoon a formal welcome was given by the Vice Chancellor of the University, and between 2 30 and 5 a series of lectures was held at the University These included the Diagnosis of Jacksonian Epilepsy by Mr G Jefferson , Success and Failure in Organotherapy by Prof G R Murray , Formation of Bone in Soft Parts by Prof J S B Stopford , and Infective Labyrinthitis its Rôl in the Production of Otitic Meningitis and its Surgical Treatment, by Sir William Milligan The various departments of the University were inspected and in the medical library an exhibition of rare medical books was on view The non medical members of the party inspected the docks and part of the Manchester Ship Canal on a tug placed at their disposal by the directors On Tuesday a visit was paid to Rylands' Library, and a lunch was given at the Midland Hotel at the invitation of the Manchester Branch of the Anglo American Society In the afternoon the following series of lectures was given at the Royal Infirmary Arterial Insufficiency, by Dr E C Bramwell , the Experimental Study of Epidemics, by Prof W W C. Topley , Gynæcology in Manchester, by Dr A Donald , Symptomless Hæmaturia, by Mr A H Burgess , the Surgical Treatment of Arthritis Deformans, by Mr H Platt A party was taken to view the Royal Exchange, by invitation of the chairman of the board of directors, and in the evening a civic reception was given to the delegates by the Lord Mayor and Corporation in the Town Hall On Wednesday a party visited Richard Haworth and Company s cotton mill, and a lunch was given at the Midland Hotel on the invitation of the medical staffs of the Manchester hospitals

Leeds —A full programme was arranged in advance for the visitors starting each day at the Medical School at 9 A M , and at the various departments lectures and demonstrations were held until 6 P M The departments of anatomy, pathology, and surgery occupied the mornings , medicine, including neurology and children's diseases, the afternoons until 5 o clock The work of the eye and ear cliniques X ray diagnosis, and X ray therapy were demonstrated between 5 and 6 On Monday the party was welcomed by Dr J. K Jamieson Dean of the Faculty of Medicine of Liverpool University Among the lectures and demonstrations Dr J Burrow spoke on Some Problems of Cardiac Disease, and Prof W H M Telling gave Some Remarks on Sigmoid Diverticulitis Sir Berkeley Moynihan delivered an address on the subject of gall stones It was unfortunate that owing to the arrangements made by the organisation of the visitors themselves, they were late in arrival for the demonstrations every day except Wednesday when those of the party stationed in the city attended the cliniques On the other days a journey from Lancashire had to be made The necessity of an early departure by train, and a late arrival in the mornings took the edge off the programme, and many of the demonstrations were badly attended However, the experience gained and the hasty friendships made will enable the next meeting to be a greater success The surgical cliniques in the middle of the morning attracted most attention On Wednesday morning the Lord Mayor welcomed the members of the Association, and Dr C Mayo made a happy speech in reply

On Wednesday evening the whole of the delegates sailed from Liverpool by special steamers for Ireland

Dublin —The Association visited Dublin in two parties, from Thursday, June 11th, to Monday, June 15th, inclusive The first party spent the Thursday and Friday in Dublin and then changed places with a similar party which had gone first to Belfast For the four days of their stay in Dublin the visitors were invited to spend what time they chose each morning in the several hospitals where interesting cases were shown by surgeons and physicians, and where special series of operations were performed This was probably the part of the programme which the visitors enjoyed most In addition three special sessions for exhibition of cases were held in the Physics Theatre of University College, the authorities of which institution took special pains to provide for the comfort of their visitors On Thursday morning on their arrival the Americans were welcomed at the Royal College of Physicians by the President, Sir William Thompson In the afternoon a discussion was held at University College on exophthalmic goitre, Prof F O Carroll presiding The discussion was opened by Prof T G Moorhead, who was followed by Dr Charles Mayo and Drs T G Hardman and H F Moore On Friday morning, under the presidency of Sir James Craig, a discussion took place on encephalitis lethargica The discussion was opened by Prof F C Purser, and a series of some 20 cases exhibiting various sequelæ was shown On Saturday morning after the exhibition of some medical cases, a discussion on puerperal sepsis was opened by Dr G FitzGibbon, Master of the Rotunda Hospital, who was followed by Prof J W Bigger and Prof R J Rowlette A pleasant interchange of honours took place between the American and Irish professions At one of the early meetings

A Liverpool Heart Hospital—It is proposed, at a cost of £10 000, to convert a private residence in Liverpool, not far from the University, into a hospital for the treatment of heart cases. There are said to be 1500 people crippled by valvular disease of the heart in Liverpool and its district.

New Infirmary for Harrogate—The governors of the Harrogate Infirmary have adopted the recommendation of the General Committee to build a new hospital of 100 beds capable of extension to 150 beds at an estimated cost of about £70 000. The building will probably be completed by the summer of 1927. The site on Knaresborough road covers six acres and will cost £6000.

Rebuilding of Middlesex Hospital—In the exercise of their discretion as trustees of the Zunz Bequest, Mr Henry Gardner and Mr Sam Baer have made a grant of £20 000 to the fund for the rebuilding of the hospital. The money will be used for the reconstruction and maintenance of the Annie Zunz Ward, which was provided in 1908 by a grant of £7000 from the same bequest. Towards the £ 00 000 required for the rebuilding about £110,000 has now been given. The students of the hospital have each promised to subscribe a penny a day for the next five years in addition to their individual gifts.

Royal College of Surgeons in Ireland: Election of President and Officers—The election of President, Vice-President, and Council of the College was held on June 3rd. Mr R. Charles Butler Maunsell was re-elected President and Mr Andrew Fullerton was re-elected Vice-President. The following were elected members of Council: Mr John Benjamin Story, Sir Thomas Myles, Major Gen R H S Sawyer, Sir Arthur Chance, Sir Robert H Woods, Mr Richard Lane Joynt, Mr Thomas Eagleson Gordon, Sir F Conway Dwyer, Mr Alexander J Blayney, Sir William Taylor, Mr Trevor N Smith, Mr G J Pugin Meldon, Mr Howard Stevenson, Mr Seton Pringle, Sir William I de C Wheeler, Sir C Arthur K Ball, Mr R Atkinson Stoney, Mr Edward Sheridan, and Mr Adams A McConnell.

Chelsea Clinical Society—At the annual general meeting of this society held recently at St George's Hospital the following office bearers having been nominated by the Council were duly elected:—President: Dr Seymour Price. Vice-Presidents: Sir Thomas Parkinson, Dr Rivers Pollock, Dr F Young, Dr J D Rolleston, and Mr Ivor Back. Council: Dr H A Philpot, Dr W F Robinson, Mr Graeme Anderson, Mr Gaymer Jones, and Mr D C Fitzwilliams. Treasurer: Dr K Eckenstein. Secretaries: Mr A R Thompson and Mr L D Bailey. Dr Gordon Lane, the retiring president, then opened a discussion on Facultative Diagnosis—the use of our powers of clinical diagnosis without resort to laboratory assistance—in which Dr C O Hawthorne, Mr Fitzwilliams, Mr Ivor Back, Dr Crowdson Thomas, and Mr Thompson took part.

Harveian Society of London—The annual dinner of the Society was held at the Connaught Rooms, Great Queen-street, W C, on June 11th, the President, Sir John Broadbent, in the chair. After the loyal toasts the Harveian Society was proposed by Sir Humphry Rolleston, who spoke of the early history of the Society founded in 1831, and of the value of the Harveian lectures which had been delivered annually for the past 50 years. In his response the President quoted some amusing passages from the life of William Harvey, when Harvey was asked to draw up rules for the better management of St Bartholomew's Hospital. The main improvement Harvey suggested was the complete subservience of the surgeons to the physicians. Sir John Broadbent expressed the hope that members of the Society would support individually the Harvey memorial tower at Hempstead church, and referred to the generous gift which had recently been made to the Society by Dr George Buckston Browne. Dr Browne donated £1000, the interest on which was to be used for a £50 prize and medal, to be awarded biennially by the Society. The health of the visitors was pleasantly proposed by Mr Zachary Cope, to which Sir William Leishman, Sir StClair Thomson, and Sir Edward Marshall Hall replied. Sir William Leishman, in the course of his reply, paid a tribute to the memory of his old colleague and former president of the Society, Dr Reginald Dudfield, who died recently. "Few understood," he said, "the value of Dudfield's work both to the State and to the Corps with which he served." Sir StClair Thomson entertained the company, and Sir Edward Marshall Hall spoke reminiscently, prophetically, and convincingly.

Parliamentary Intelligence.

HOUSE OF COMMONS.

Wednesday, June 10th

Wages in Clinical Thermometer Industry

Colonel Day asked the Minister of Labour whether he was aware that in the clinical thermometer industry male workers of full age were being paid wages which averaged less than £2 for a full working week of from 48 to 60 hours, and was he prepared to accede to the request of the workers employed in that industry for the establishment of a trade board.—Mr Betterton (Parliamentary Secretary to the Ministry of Labour) replied: An inquiry was recently made into the earnings in this trade. The report of the inquiry is at present under consideration and I am not yet in a position to say what action will be taken.

Advertisements on Vaccination Notices

Mr Robert Morrison asked the Minister of Health if he was aware that soap advertisements were printed upon the back of the notice of the requirements of vaccination; what amount was derived from this source; and whether it was intended to continue this means of raising revenue.—Sir Kingsley Wood (Parliamentary Secretary to the Ministry of Health) replied: The answer to the first part of the question is in the affirmative and to the last part in the negative. As regards the second part, the amount received for the sale of the advertising space in the current issue of the notice was £135.

Supplies of Liquid and Dried Milk in Local Areas

Mr Groves asked the Minister of Health the quantity and money value of liquid and dried milk supplied to mothers and children during the quarter ended March 31st, 1924, in the county borough of West Ham, the borough of Poplar, the city of Birmingham, and the country generally.—Sir Kingsley Wood replied: The following statement contains the information asked for as regards the three local areas mentioned in the question:—

	Quantity	Money value £	s	d
West Ham	Dried milk, 61,625 lb	2750	0	0*
	Liquid milk		—	
Poplar	Dried milk, 3733 lb	279	19	6†
	Liquid milk, 139 974 pints	1350	3	5
Birmingham	Dried milk, 17,772 lb	1222	0	0‡
	Liquid milk		—	

* Includes the sum of £1 596 9s 2d paid by recipients.
† Includes the sum of £194 17s paid by recipients.
‡ Amount paid for dried milk supplied at cost price.

The information desired as regards the country generally is not available, but for the financial year 1923–24 the estimated gross expenditure of local authorities in England and Wales on milk supplied to mothers and children was £383 878, and the estimated net expenditure was £174,080.

Putative Fathers and Maintenance Expenses

Major Steel asked the Minister of Health whether he would consider the advisability of giving power to boards of guardians to take legal proceedings, prior to the birth of a child, against the putative father of an illegitimate child for payment of the cost of maintenance of the woman during such time as she should be in the Poor-law institution before the birth of the child and for the expenses of her confinement.—Mr Neville Chamberlain replied: The Government are not in a position to undertake legislation of the kind suggested at the present time.

Small-pox in Nigeria

Mr Compton asked the Secretary of State for the Colonies whether vaccination was compulsory in Nigeria; if so, at what age or ages; and how many deaths from small-pox had been reported in the territory in question during the last 10 years for which the figures were available.—Mr Amery replied: Under Chapter 53 of the Laws of Nigeria every person in the colony or southern provinces is liable to be vaccinated, and the parents of any child are required to bring it for vaccination within three months of birth. In the northern provinces similar provisions may be made by Orders relating to particular areas from time to time when considered necessary owing to the occurrence of small-pox. It is not possible, however, to enforce the Ordinance strictly, and the number of vaccinations performed between 1913 and 1923 amounts only to 1,890 237 in a population of over 18 000 000. As registration of deaths is not and cannot be made compulsory it is not possible to give any figures which would indicate even approximately the number of deaths from small-pox. The numbers who died in hospital from this disease in recent years are: 1919, 30; 1920, 341;

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning

SOCIETIES

ROYAL SOCIETY OF MEDICINE, 1, Wimpole street W

MEETINGS OF SECTIONS

Tuesday June 23rd

GENERAL MEETING OF FELLOWS at 5 30 P M
Ballot for election to the Fellowship

Saturday June 27th

ANÆSTHETICS
Provincial Meeting in the Physiological Lecture Room, Manchester University
Discussion on
Chloroform, to be opened by Dr H P Fairlie
Demonstration
Mr S R Wilson and Dr S McSwiney (Manchester) Animal Demonstration showing Effects of Adrenalin Injections during Ether and Chloroform Anæsthesia
Exhibition of apparatus in the laboratories
Will those wishing to attend kindly apply without delay to Dr H R Phillips 2 Cumberland Mansions Bryanston square, W

MEDICO LEGAL SOCIETY
TUESDAY, June 23rd —8 30 P M, Annual General Meeting at the Royal Society of Medicine 1 Wimpole street W *Business* 1 Election of Officers and Council for Session 1925 26 2 Report of the Hon Secretaries presented to and adopted by the Council 3 Report of the Hon Treasurer and presentation of accounts
After the Meeting there will be a discussion on a Report made by a Committee to the Council of the Society dealing with the foundation in London of a Medico Legal Institute

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST GRADUATE MEDICAL ASSOCIATION, 1 Wimpole street, W
MONDAY, June 22nd to SATURDAY, June 27th —WEST LECTURE HALL, Royal Society of Medicine, 1 Wimpole-street Lecture arranged by the Fellowship of Medicine and open to all members of the medical profession At 5 30, Dr A F Hurst on The Treatment of Cholecystitis and the Prevention of Gall stones Friday, June 26th LONDON TEMPERANCE HOSPITAL, Hampstead road, N W Course in Medicine, Surgery and the *Special Departments for general practitioners and others* Afternoons only 4 30 to 6 daily Clinical demonstrations for one hour and a lecture for half an hour —CHELSEA HOSPITAL FOR WOMEN, Arthur-street, S W Post graduate Course in Gynæcology Lectures and demonstrations daily Operations, pathological demonstrations Third week —LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE, Endsleigh Gardens N W Tuesday and Thursday at 2 Lecture-demonstration by Dr P Manson Bahr and Dr G C Low —ST JOHN'S HOSPITAL FOR DISEASES OF THE SKIN Leicester-square Daily demonstrations in the O P Departments Bi weekly lectures by Dr Roxburgh and Dr Dore —LONDON LOCK HOSPITAL, 91, Dean street, W Comprehensive Course Daily out patient instruction and lectures dealing with the diagnosis and treatment of V D

WEST LONDON POST GRADUATE COLLEGE West London Hospital Hammersmith W
MONDAY June 22nd —12 noon Mr Simmonds Applied Anatomy 2 P M, *Dr Scott Pinchin Medical Out patients* 2 P M, Mr Donald Armour Operations
TUESDAY —11 A M Mr Endean Venereal Diseases 12 noon Dr Burrell Chest Cases 3 P M, Dr Pritchard Medical Wards
WEDNESDAY —11 A M Medical Registrar Medical Wards 2 P M, Mr Tyrrell Gray Operations 2 P M Dr Owen Medical Out patients
THURSDAY —11 A M Sir Henry Simson Gynæcological Wards 2 P M *Mr MacDonald Genito Urinary* Dept 2 P M Mr Simmonds Surgical Out patients
FRIDAY —12 noon Surgical Registrar Surgical Pathology 2 P M Mr Sinclair Surgical Out patients 2 P M Mr Vlasto Throat Nose and Ear Dept
SATURDAY —10 A M, Dr Saunders Medical Diseases of Children 10 A M Mr Banks Davis Operations on Throat Nose and Ear
Daily 10 A M to 6 P M Saturdays 10 A M to 1 P M *In patients Out patients Operations Special Departments*

NORTH EAST LONDON POST GRADUATE COLLEGE Prince of Wales's General Hospital Tottenham N
TUESDAY, June 23rd —4 30 P M, Dr F G Crookshank *The Sympathetic Nervous System*
FRIDAY —4 30 P M, Dr F L Provis Gonorrhœa in Women
Daily Medical and Surgical Clinics Clinics in the various Special Departments Surgical Operations, &c

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC Queen-square, Bloomsbury, W C 1

POST GRADUATE COURSE MAY–JUNE

CLINICAL LECTURES AND DEMONSTRATIONS

MONDAY June 22nd —2 P M, Out patient Clinic Dr Hinds Howell 3 30 P M The Diagnosis of Cerebral Tumours Dr Riddoch
TUESDAY June 23rd —2 P M, Out patient Clinic Dr Walshe 3 30 P M, Compression Paraplegia (2) *Intramedullary* Dr Grainger Stewart
THURSDAY June 25th —2 P M Out patient Clinic Dr Kinnier Wilson 3 30 P M, Localisation in the Cerebellum Dr Gordon Holmes
FRIDAY June 26th —2 P M Out patient Clinic Dr Gordon Holmes 3 30 P M, Surgery of Spinal Cord Mr Percy Sargent

COURSE OF LECTURES AND DEMONSTRATIONS ON THE PATHOLOGY OF THE NERVOUS SYSTEM
MONDAY *June 22nd —12* noon *The Neuroglia Dr J G Greenfield*
A COURSE OF CLINICAL DEMONSTRATIONS will be given by Dr H J MacBride chiefly on METHODS OF EXAMINATION OF THE NERVOUS SYSTEM in the Wards at 10 A M on Tuesdays and Fridays The Fee for this Course is £2 2s
Mr Armour and Mr Sargent operate at the Hospital on Tuesday and *Friday* mornings at 9 A M or at such other times as may be announced
Fees should be paid to the Secretary of the Hospital at the Office on entering for the Course
J G GREENFIELD Dean of Medical School

THE LONDON SCHOOL OF DERMATOLOGY, St John's Hospital Leicester-square W C 2
TUESDAY June 23rd —5 P M, Dr Roxburgh Psoriasis
THURSDAY —5 P M Dr Dore Animal Parasites

HOSPITAL FOR SICK CHILDREN Gt Ormond st, W C
THURSDAY June 25th —4 P M, Mr Tyrrell Gray Intussusception

QUEEN CHARLOTTE'S MATERNITY HOSPITAL, Marylebone road N W
THURSDAY June 25th —5 P M Mr L C Rivett *Mechanical Difficulties in Labour*

THE JAMES MACKENZIE INSTITUTE FOR CLINICAL RESEARCH St Andrews
MONDAY June 22nd —10 45 A M, Dr Orr Angina Pectoris 12 noon Dr Hynd Clinical Examination of Urine 4 30 P M (at the Bute Medical Buildings) *Prof Waterston Structure and Development of the* Heart
TUESDAY —10 45 A M, Dr M Ramsay Ocular Manifestations of Vascular Disease 12 noon, Demonstrations of Electrical Ophthalmoscope 4 P M, Dr Orr *Intermittent Claudication*
WEDNESDAY —10 45 A M Dr Bryson Shoulder Pain 12 noon (at the Bute Medical Buildings) Prof Waterston The Sympathetic System in Relation to Muscle 4 P M Prof Herring Internal Secretions
THURSDAY —10 45 A M *Dr Rowland Albuminuria in* Childhood 12 noon Dr Hynd The Nature of Urinary Protein 4 P M (at the Royal Infirmary, Dundee) Prof Price Clinical Demonstration
FRIDAY —10 45 A M, Dr Paton Observations on School children *12 noon Dr Bryson* Mental States in Disease 4 P M, Concluding Address

Appointments.

DICKSON AGNES F, M B, Ch B Glasg has been appointed Resident Medical Superintendent at Darnley Hospital *Renfrewshire and Assistant Medical Officer in connexion with Maternity Service and Child* Welfare Work in the County

MADDEN, FRANK COLE O B E M B B S Melb, F R C S Eng Emeritus Professor of Surgery in the Royal School of Medicine, Cairo, and Consulting Surgeon *to Kasr-el Ainy* Hospital

WILKINSON A GEDES M B Ch B Manch D P H, D T M, Part time Medical Officer of Health for the Egham Urban District

Metropolitan Hospital Kingsland road E McCULLAGH W McK H M B B Ch Belf F R C S Eng Surgeon for Diseases of Women and WHITE C, M D Lond F R C P Lond F R C S Eng, Consulting Surgeon

Middlesex Hospital COCKAYNE E A M D Oxf F R C P *Lond Physician and* BOLDERO H E A, M B, B Ch Oxf, M R C P Lond Assistant Physician

Queen Charlotte's Maternity Hospital SAUNDERS R M, M B Ch B *Senior Resident Medical Officer and* HAMILTON, G E R, M B B S Assistant Resident Medical Officer

Certifying Surgeons under the Factory and Workshop Acts
ASHTON D A M B Ch B Manch *(Yaxley Huntingdon)*
MACCORMACK C P V, L R C P & S Irel (Calvert, Buckingham)

with the expense and trouble of using solder, the housewife and small fruit-grower will be able to can fruits and make a profit. It is hoped that women's institutes will provide themselves with a sealer for the general use of their members. Tins can be obtained by writing to the Research Station; those to hold a reputed pound cost about 1¼d., the 2 lb. tins 2¼d., while the corresponding price for the 2 lb. glass jar is 11d. or 11½d. It is understood that some small fruit-growers who started canning fruit have given up as they could not get hold of tins at a reasonable price, while the cost of glass jars was prohibitive.

Standardised Packing

At the other end of the table was a display of packages used for fruit and vegetables. It included a French lettuce crate (non returnable), a tomato box (non returnable), which has largely replaced the "strike" and the 12 lb. handled basket; a 2 lb. (returnable) box for English forced strawberries, and a melon "handle" for Guernsey melons. Packages of this type are recommended by the Ministry of Agriculture. If the grower will (1) use a standardised package which enables the articles to be packed so as to avoid injury and to be displayed and at the same time handled by market porters, &c.; (2) pack an honest package of goods of a certain standard of quality, he will be allowed to affix to the packet a label issued by the Ministry which serves as a guarantee of quality. Until recently the home grower has been able to dispose of his goods round the corner; foreign growers who grow for export have paid attention to methods of presentation of the articles so successfully that English growers have failed to sell their goods in competition. The Ministry have been obliged to provide instruction at Penzance to prevent the local trade being entirely captured by Roscoff. Non returnable packages must be in a form convenient for the use of the housewife who gets a better article if she buys it as it leaves the grower; the wholesaler or retailer does not want to break bulk or damage the articles.

In this country with its variable climate gluts of fruit are unavoidable. The Ministry intend using broadcasting to inform the housewife of an approaching glut some three weeks or so beforehand, so that she can make the preparations necessary and assemble the tins, jars or bottles required. A plum glut, for instance, only lasts a week, giving no time for preparation. In leaflet No. 2 of the Research Station a method of weighing jam during its boiling is described whereby the inexperienced may be able to tell when the jam is sufficiently boiled to set when cool and to keep well.

THE NEED FOR MORE AMBULANCES

AT a recent inquest in Southwark, the coroner, Dr. F. J. Waldo, again called attention to the need for more ambulances in the metropolitan area if cruel and dangerous delay is to be avoided in the conveyance of street accidents and other urgent cases to the nearest hospital. On the occasion in question a man, 71 years of age, had slipped on a banana skin and in falling had sustained a simple fracture of one of his thighs, in consequence of which he died. The evidence further showed that he lay on the pavement for more than a quarter of an hour before he was removed. An ambulance arrived 14 minutes after it was first summoned, the delay being due to it having been sent for to pick up another accident case, and this one ambulance was proved to have dealt at that time with five cases in 50 minutes. Incidentally, the policeman who was called to the accident had been in the force for five years but had not attended any course of instruction in first aid under the St. John Ambulance Association, nor did he exhibit any desire to do so. A verdict of "Accidental death" was returned by the coroner, and the following observations are based upon those made by Dr. Waldo in the course of the inquest and upon the facts proved in the evidence before him. (1) The number of accidents in the streets of London has greatly increased in recent years, and a large proportion of these is caused by motor-driven vehicles. (2) The number of motor cars and other motor-driven vehicles has increased and is increasing rapidly, and there is every prospect of the increase being continued. (3) This points to a constant increase of accidents not only because there will be more motor vehicles, but because the increase in their numbers, and particularly in the number of fast-driven cars and lorries, means the constant influx of inexperienced, and often untrained drivers. (4) The present number of motor ambulances in the metropolitan district ruled by the London County Council, as distinct from the City, is 11, with a prospect of three more by the end of the year. It is submitted that even then 14 will not be sufficient to deal with the emergencies which must occur. It is not only a question of providing for accidents on their present scale, but for an almost inevitably greater number of them. (5) It has been suggested[1] that the coöperation of the St. John Ambulance Association and of the Metropolitan Asylums Board with the L.C.C. would be of use in ensuring an efficient service, but as far as we are aware no definite alliance for this purpose between these bodies has been effected. (6) A suggestion that ambulances might be housed at fire stations has also been made. At the inquest before Dr. Waldo a witness said that this plan has been adopted with success at Portsmouth. No doubt conditions there are different from those in London, but the utilising of fire stations for ambulances has been condemned by the metropolitan authorities as impracticable, without any convincing reason, so far as we know, having been given to a deeply interested public for the decision. (7) The question of policemen being obliged to take courses of instruction in first aid is outside that of the provision of ambulances, but we note that Dr. Waldo, who is coroner for the City as well as for Southwark, speaks of the police in the City being obliged to undergo instruction which is optional for police outside its area. This point, presumably, concerns the Home Office. In conclusion we would point out that when the victim of a street accident has to lie for what seems to sympathetic bystanders an unnecessarily long time waiting for an ambulance, it is inevitable that unfavourable comment and possibly exaggerated blame, should be directed against the "authorities" in the daily press. In these circumstances the London County Council should feel assured that public opinion will not censure them for extravagance if they should make reasonably ample provision to meet a growing demand.

AN EXHIBITION OF INVENTIONS

THE exhibition held during the past week at the Central Hall, Westminster, was the first of a series of Annual Public Exhibitions of Inventions organised by the Institute of Patentees. The practical results of the series and of the work of the institute, it is hoped, will be the introduction of legislation beneficial to inventors and a just recognition of their work. The way in which inventors have responded to the new movement may be gauged from the fact that nearly 210 inventions were displayed at the exhibition. Of the ten sections into which the inventions were grouped that consisting of domestic and labour-saving devices was the largest, 20 per cent. of the exhibits being produced by women. Exhibits of particular interest in this section were a milk churn and a window fly screen. The novel feature of the former was the lid, so fixed that the milk was hermetically sealed, whilst the mouth of the churn was protected from dirt during transit operations. The fly screen consisted of a cotton gauze spring blind attached to a sash window so that when the latter was opened the screen unrolled to cover the opening. The display of several excellent devices for the automatic disinfecting and cleansing of sanitary systems was indicative of the thought expended on a matter vital to the public health. An invention of direct medical interest was an artificial pneumothorax apparatus, in which air is compressed by the weight of a piston instead of by the customary hydraulic means. The instrument is strong, simple, and portable. The remaining sections of the exhibition, devoted to inventions in mechanical, electrical and wireless engineering, in building and in toys, appealed to a wide public.

RHEUMATOID ARTHRITIS AND OSTEO ARTHRITIS

Dr. Robert B. Osgood, of Boston, U.S.A., delivered the Hugh Owen Thomas Memorial Lecture at Liverpool on June 2nd, taking as his subject the differentiation of the pathology and symptoms of "rheumatoid arthritis" and "osteo arthritis." The former, he said, was a disease of the first half of life, occurring in toxic subjects of the so called "ptotic" type and not infrequently ushered in by a definite illness, while the latter developed insidiously in persons otherwise well, for the most part in the latter years of life. The ætiology was discussed in some detail. The rheumatoid series of cases clinically were associated in a few cases with definite foci of infection in teeth, tonsils, pelvis, or elsewhere, and in many more with intestinal stasis due in certain instances to lesions susceptible of surgical treatment. The possibility of infective or toxic origin therefore arose—no specific organism, however, could be incriminated. In many cases no definite focus could be found, and surgical measures were not to be recommended unless a definite lesion was demonstrably causing deterioration of the general health. He found such laxatives as agar agar, frequent colon lavage, abdominal massage, rest from worry and overwork, and the open air life much more valuable in the majority of cases.

A fine series of slides was then shown, illustrating bone atrophy and loss of sharp joint outlines as seen by X rays, and a number of pathological sections showing extensive small round cell infiltration in the synovial membrane and ulceration of cartilage, particular attention being called to the obliterative changes taking place in the smaller arteries. The orthopædic surgeon's first duty, he continued, was the prevention of deformity and the avoidance of friction on

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[1] See THE LANCET, Jan. 17th, 1925, p. 141.

A Study

OF THE

TUBERCLE COMPLEMENT-FIXATION REACTION

WITH BESREDKA ANTIGEN IN THE INVESTIGATION OF PULMONARY DISEASES.

By W. BROUGHTON-ALCOCK, M.B. Camb.,
MACKENZIE DOUGLAS, M.D. Edin.,
and
H. C. LUCEY, M.D. Lond., D.P.H.

(From the Central and Orpington Laboratories, Ministry of Pensions.)

Since the serological reaction as an aid to diagnosis was first applied to tubercle infection by Neisser and Sachs, many workers have investigated the tubercle complement-fixation reaction (T.C.-F.R.). Reference may be made to two recent reviews in which helpful summaries are given.[1 2] The purpose of this paper is to make known the laboratory findings of the T.C.-F.R., employing Besredka's antigen, and their relationship to the findings of the *B. tuberculosis*. We have tabulated the results obtained from the examination of the sputa for *B. tuberculosis* and of the blood sera by the T.C.-F.R., collected from ex-Service subjects as part of a complete routine investigation on each to determine the presence or absence of pulmonary tuberculosis, its activity or arrest. The total number of 6000 were males and include two groups of cases of which approximately two-thirds were examined as out-patients and one-third as in-patients in observation wards. The results in each group were practically similar. We would emphasise that the subjects examined showed various disabilities of a pulmonary nature, due to chest wounds, gassing, pandemic influenza of 1918, chronic bronchitis, &c.; many cases examined were not clinically tuberculous, though a certain number may have been so some years previously or may have more recently developed tuberculosis consequent upon or subsequent to a previous lung condition.

The difficulties and differences of opinion in diagnosis of tuberculosis upon clinical examinations of pulmonary cases, and especially conditions consequent upon gassing or the pandemic influenza of 1918, wherein the X rays reveal pathological changes similar to those found in certain forms of pulmonary tuberculosis, are well known and can be readily understood, so that any practical and reliable aid to specific diagnosis by laboratory methods is a valuable one. Pre-war experience has shown us that for various reasons the *B. tuberculosis* is found in the sputum on repeated examinations in but approximately 40 per cent. of all cases of clinically diagnosed pulmonary tuberculosis, so that further supplementary aids, such as serological investigation, in addition to the search for the organism, have their utility in the same way as they have in certain other microbic infections.

Table I. gives the relationship of results of the T.C.-F.R. when employing Besredka's antigen in cases showing (1) a positive finding of *B. tuberculosis* in the sputum (*a*) at the same date or (*b*) during or after the Great War, or (2) a negative finding at present or past or at both examinations of the sputa. Also is given the percentage of positive Wassermann reactions (W.R.). *It is important to have found that a percentage of pulmonary cases under investigation were suffering from lesions due to syphilis.* These have benefited by diagnosis and subsequent specific treatment.

Negative Findings.

In Table I. the percentage of negative findings when *B. tuberculosis* was present in the sputum is based on one examination only of the blood. It was not practical to make many repeated examinations, and in the limited number of cases where a second examination was practicable we found some support to the observation, we think first made by Calmette, that tuberculous cases giving a negative T.C.-F.R. at one examination may give a positive finding when re-examined, and a subject giving a negative finding when clinically positive should have the blood-serum re-examined on a further one or more occasions. In this connexion we call attention to Ichok's publication.[3]

May we assume that the specific fixation property detectable in the serum in tubercle infection is dependent on individual response or reaction and that pulmonary disease is an infection of localised activities giving rise to smaller production of this fixation property or so-called antibody than is to be expected and found in other diseases where the infection is at a certain period more generalised. In the generalised tertiary or final stage of tuberculosis the patient is approaching death and natural response and reaction appear limited or absent, so that workers state that the T.C.-F.R. is herein not infrequently negative. In the few (five) cases of whom we have examined the bloods taken at the autopsies which showed death due to generalised tuberculosis, the reaction was, however, positive. In two cases the blood taken six to nine days and in one case the cerebro-spinal fluid taken four days before death, the T.C.-F.R. was positive. In one other case the blood one month before death was negative.

Besredka's experience has shown him that a good antigen of human *B. tuberculosis* alone gives satisfactory results and prefers it to a polyvalent antigen or mixture of human and bovine strains. Accepting

Table I.—*Examination by Means of T.C.-F.R. and W.R. on Blood Sera of 6522 Cases with Clinically Doubtful or Positive Signs of Pulmonary Tuberculosis.*

T.C.-F.R. on sera giving *Negative* W.R., 5997. Pos. 1858, B.L. 540, Neg. 3599.									Both T.C.-F.R. and W.R. *Pos.*, 271.		T.C.-F.R. *Neg.* or *B.L.* and W.R. *Pos.*, 254.	
B. tuberc. found in sputum at time of blood test. 310 (*a*)			*B. tuberc.* found in sputum at some period—viz., 1 to 6 years previous to blood test.* 394			Previous results of sputum exams. for *B. tuberc.* not known or neg.† 5293			*B. tuberc.* found in sputum.			
									Yes. 12·9%	No. 87·1%	Yes. 0·4%	No. 99·6%
Pos.	B.L.	Neg.	Pos.	B.L.	Neg.	Pos.	B.L.	Neg.	—			
84·5%	6·1%	9·4%	40·9%	6·1%	53%	27·1%	9·4%	63·5%	W.R. pos. in 525 of 6522 cases examined = 8%.			

* Information based chiefly on ex soldiers' statements: whenever possible on documentary evidence.
† When documentary evidence was obtainable. B.L. = Border-line.

(*a*) Seven of these cases were examined on one, two, or three subsequent occasions at intervals of several weeks or months with a view to ascertaining whether sufficient tuberculous antibody appears at certain periods to cause a positive complement-fixation reaction. Four maintained negative reactions throughout, though *B. tuberculosis* was again found in sputa. One case on second examination gave a weak positive reaction, one case on second examination gave a border-line reaction, and one case on third examination gave a weak positive reaction.

this, we think that were it practicable, by the use of autogenous strains, the percentage of negative findings in tuberculous cases may, and, reasoning from experience of other specific antigen-antibody C.-F. reactions, would probably be reduced. Our tests with autogenous strains have been too few to enable us to form a judgment.

Positive Findings.

The percentage of positive findings when *B. tuberculosis* is found in the sputum is 81·5 per cent., that of doubtful reactions 6·1 per cent., and of negative 9·4 per cent. Regarding the positive findings of the T.C.-F.R. when *B. tuberculosis* has been found previously, it is not possible for us to state for how long the reaction remains positive after the arrest of active diseases. Besredka estimates the persistence may be up to six months.

To consider the case giving a positive T.C.-F.R. finding when there is no evidence of tuberculous lesions on clinical, X ray, or sputum examinations, these are grouped into two categories: (1) when the W.R. is also positive and (2) when the W.R. is negative.

Group 1.—The incidence of the finding of *B. tuberculosis* in positive W.R. cases is shown. That the two diseases occur concurrently, though known, is *supported by our figures;* but our percentage of positive W.R. which bear close relation with that found at general hospitals in series of unselected cases does not indicate that tubercle is more common in the syphilitic. Of the 246 ex-Service men in whom *B. tuberculosis* was found 30, or 9·6 per cent., gave a positive W.R. That a positive W.R. is not due to *tubercle infection has been amply confirmed,* but we share the opinion of the early French workers that a non-specific positive T.C.-F.R. is not infrequently found when the W.R. is positive and when Besredka's antigen, which includes the culture-media, is employed.

Group 2.—Where the W.R. is negative and T.C.-F.R. positive and there is no evidence of tuberculosis by clinical or by other laboratory methods of examination, questions are raised which cannot at

would be more instructive to class the so-called border-line reactions separately. It will be noted that such results occur in all groups, including cases wherein the tubercle bacillus is found at the time of examination with and without clinical evidence of disease, so that the finding cannot be classified as a *negative one.*

Conclusions.

And now to the significance of these findings and values to be assigned.

Let us introduce our remarks by the wise counsel —Look to the laboratory for aid, not responsibility *for diagnosis in clinical medicine.* Our principal object is to provide reliable additional evidence to the clinician in the not infrequent difficulties of diagnosis of tuberculosis. Any survey must be on the basic foundation that the living organism is not a machine nor can the chemico-physical activities in the body regulating organic function be brought to manifest themselves in test-tube experiment with mathematical precision of result and facility of interpretation. Progress has come from experiment since and through work upon Koch's original tuberculin test, von Pirquet's skin test, Wright's opsonic index, Neisser and Sachs's, Besredka's, Inman's and Dudgeon's work (amongst others) on the tubercle C.-F.R. Prof. H. R. Dean gave at the 1923 meeting of the British Medical Association a paper stimulating to discussion, and we hesitate to criticise. We cannot, however, admit comparison of the readings and interpretations in opsonic index and C.-F.R., nor that the work of the C.-F.R. has been disappointing, at least in its service to the practitioner. We are optimistic in our view of the development of a still more useful reaction as progress is made, in preparation of the antigen, in our understanding of the rationale of the reaction, *and in our knowledge of the pitfalls or* non-specific reactions as well as of the findings in the varied stages or extent of the disease and of the response to the two groups of causal organisms with their number of strains. One practical advantage not to be overlooked is, that the T.C.-F.R. can be applied in an out-patient clinic.

reactions one cannot expect more of it than a valuable link in the chain of evidence. When Besredka's antigen is used a W.R. should also be carried out.

Technique.

Tubes.—3 in. × ½ in. are used. These are extra wide to allow of easy mixing of the constituents when the tubes are shaken.

Racks which fit Harrison's water-bath are used, but to admit the wider tubes the holes must be increased to a diameter of ½ in. A rack will hold 40 holes of this diameter.

Antigen.—Unit used is 0·3 c cm. of Besredka's undiluted antigen.

Hæmolytic System.—3 per cent. suspension of sheep's red cells, each c cm. of which is sensitised with 8 M.H.D. of hæmolytic serum. The quantity of 3 per cent. cells used for each tube is 0·5 c cm. plus 0·5 c cm. of saline dilution of the hæmolytic serum, so that each tube actually receives 1 c cm. of a 1·5 per cent. suspension of sensitised cells.

Complement.—Guinea pig, killed the previous afternoon. The blood is placed in incubator at 37° C. for one hour to facilitate separation of serum from clot, then in ice chest overnight. The serum is pipetted off next morning. A preliminary estimation of the M.H.D. of complement is made on the same day as the test, and at the same time the amount of complement fixed during two hours by the unit of antigen (0·3 c cm.) used in the test, is estimated. For these estimations two rows of eight tubes are put up as shown in Table II.

TABLE II.

Front Row for Estimation of M.H.D. of Complement.

1/15 comp. ..	0·06	0·08	0·1	0·12	0·14	0·16	0·18	0·2
Saline	0·94	0·92	0·9	0·88	0·86	0·84	0·82	0·8

Back Row for Estimation of Amount of Complement Fixed by Unit of Antigen.

1/15 comp. ..	0·1	0·12	0·14	0·16	0·18	0·2	0·22	0·24
Antigen	0·3	0·3	0·3	0·3	0·3	0·3	0·3	0·3
Saline	0·6	0·58	0·56	0·54	0·52	0·5	0·48	0·46

The total volume in each tube is 1 c cm.

Both sets of tubes are allowed to stand at room temperature for one hour and then put in the water-bath at 37° C. for another hour, at the end of which time 1 c cm. of sensitised cells is added to each tube (making total volume to 2 c cm.) and the tubes are shaken. The results are read after half an hour at 37° C. and 15 minutes at laboratory temperature. The tube in the front row, which shows *complete* hæmolysis with the smallest amount of complement, is noted. This amount of complement is the M.H.D.

The tube in the back row, which shows *complete* hæmolysis with the smallest amount of complement, is also noted. The difference between the amounts of complement contained in these two tubes is the amount of complement fixed by the antigen. For example, say the fifth tube of the front row (containing 0·14 c cm. of 1/15 complement) and the sixth tube of the back row (containing 0·2 c cm. of 1/15 complement) are the two tubes chosen, then the M.H.D. is 0·14 c cm., and the amount of complement fixed by antigen is 0·2 − 0·14 = 0·06 c cm.

Test.—Six tubes are used for each serum. These are placed along the length of the rack, leaving a space between the first two and the last four tubes. 0·2 c cm. of inactivated serum is added to each tube. The first two tubes are for serum controls and the last four for the test proper. To the first control tube is added 1½ M.H.D.'s of complement. To the second control tube is added 1½ M.H.D.'s of complement plus the amount of complement fixed by antigen. To the first, second, third, and fourth tubes respectively of the test proper are added 1½, 2, 2½, and 3 M.H.D.'s of complement, plus the amount of complement fixed by antigen. These graduated amounts of complement are conveniently contained in a volume of 0·5 c cm. The following is the method used for making up the required amount of complement plus saline in 0·5 c cm. volume to each tube. This may be best given by an example. Let us presume that there are 44 sera to be tested and the M.H.D. of 1/15 complement is 0·14 while the amount of complement fixed by 0·3 c cm. of antigen is 0·06. For practical purposes we should allow for 50 sera to be tested and provide for an excess of complement. In this example 3 c cm. would be in excess.

After the complement has been added, pipette a further 0·3 c cm. of saline into each of the two control tubes and 0·3 c cm. of antigen into the four tubes of the test proper. Each tube then contains a volume of 1 c cm. All the tubes are shaken and allowed to stand for one hour at room temperature and are then placed in the water-bath at 37° C. for another hour, at the end of which time, and while the racks are still remaining in the water bath, 1 c cm. of sensitised cells is added to each tube. The tubes are shaken and at the end of half an hour the racks of tubes are taken from the water-bath and allowed to stand at room temperature for 15 minutes, when the results are read.

TABLE III.

First Control Tube to Contain 1½ M.H.D. Complement.

1/15 comp. ..	0·21 c cm.	× 50	= 10·5 c cm.
Saline	0·29 c cm.	× 50	= 14·5 c cm.
			25·0 c cm.

Mix in Jar 1 and pipette 0·5 c cm. into all first control tubes.

Second Control Tube and First Tube of Test Proper to Contain 1½ M.H.D. plus Amount of Complement Fixed by Antigen.

1/15 comp.	0·21 c cm. + 0·06 c cm. = 0·27 c cm.	× 100	= 27·0 c cm.
Saline ..	0·23 c cm.	× 100	= 23·0 c cm.
			50·0 c cm.

Mix in Jar 2 and pipette 0·5 c cm. into all second control tubes and first tubes of test proper.

Second Tube of Test Proper to Contain 2 M.H.D. plus Amount of Complement Fixed by Antigen.

1/15 comp. .	0·28 c cm. + 0·06 c cm. = 0·34 c cm.	× 50	= 17·0 c cm.
Saline .	0·16 c cm.	× 50	= 8·0 c cm.
			25·0 c cm.

Mix in Jar 3 and pipette 0·5 c cm. into all second tubes of test proper.

Third Tube of Test Proper to Contain 2½ M.H.D. plus Amount of Complement Fixed by Antigen.

1/15 comp. ..	0·35 c cm. + 0·06 c cm. = 0·41 c cm.	× 50	= 20·5 c cm.
Saline .	0·09 c cm.	× 50	= 4·5 c cm.
			25·0 c cm.

Mix in Jar 4 and pipette 0·5 c cm. into all third tubes of test proper.

Fourth Tube of Test Proper to Contain 3 M.H.D. plus Amount of Complement Fixed by Antigen.

1/15 comp. .	0·42 c cm. + 0·06 c cm. = 0·48 c cm.	× 50	= 24·0 c cm.
Saline .. .	0·02 c cm.	× 50	= 1·0 c cm.
			25·0 c cm.

Mix in Jar 5 and pipette 0·5 c cm. into all fourth tubes of test proper.

In the very rare instances when the M.H.D. of complement without antigen is above 0·14 the amount of saline dilution of the M.H.D. or M.H.D. of complement plus that fixed by the antigen is made in a volume of 0·75 c cm., since this is not possible in 0·5 c cm. exemplified above, and the final *total amount in all tubes, including controls,* becomes 2·25 c cm.

The hæmolytic systems with and without antigen and a negative and positive serum are put up as controls at the time of each test. As the amount of complement fixed is found not to be related to the clinical state or to prognosis in the disease, further tubes appear unnecessary, and on practical lines are advantageously omitted. It may be recalled that serum plus antigen cannot be taken to fix the amount of complement fixed by each separately.

To give a general working rule we consider when tubes 1 and 2 of the control are completely hæmolysed or tube 1 completely or almost hæmolysed and tube 2 completely hæmolysed, then—

Fixation in tubes 1, 2, 3, and 4 of the test denotes a strong positive result.

Fixation in tubes 1, 2, and 3 of the test denotes a positive result.

Strong fixation in tubes 1 and fixation in tube 2 only denotes a weak positive result.

Weak fixation in tubes 1 and 2 only denotes a border-line result.

Fixation in tube 1 only denotes a negative result.

We beg to thank the Director-General Medical Services, Ministry of Pensions, for permission to publish this paper, and we wish to note the loyal assistance of our staffs, especially that of Mr. T. Harrison and Mr. Thompson in the carrying out of this work. During the course of our work we have done the T.C.-F.R. on 15 cases of renal tuberculosis, and in all the reaction was positive. The reaction carried out upon 30 surgical cases in hospital and showing no signs or symptoms of tuberculosis gave a negative result in all.

References.—1. Nimmo Smith: Critical Review of the Complement Fixation in Tuberculosis, Edinburgh Medical Journal, 1922 (many references appended). 2. Ichok: L'Application de la Réaction Bordet Gengou à la Tuberculose. Travail du Laboratoire de Prof. A. Besredka: Institut Pasteur à Paris (Revue de Médecine, 1922) (many references). 3. Willmore: Royal Society of Tropical Medicine and Hygiene.

A morbid impulse to burn is not limited to any particular group of psychoses or to mental deficiency, and, for this reason, it seems probable that the impulse is of accidental origin. The presence of an alleged irresistible impulse to commit an incendiary act, unless accompanied by definite signs of mental disease or defect, cannot be held to relieve an accused person of his responsibility. The condition, moreover, is not recognised in English criminal courts.

The mental states of the offenders examined in the present series were as follows:—

Mental deficiency	5	Paranoid dementia	1
Subnormal	7	Dementia	1
Mental instability	4	Mental enfeeblement	2
Manic depressive	2	Normal	18
Chronic delusional insanity	1		
General paralysis	1	Total	44
Dementia præcox	2		

ILLUSTRATIVE CASES.

Subnormal and Mentally Defective Persons.

1. Subnormal; criminal intent; criminal habit; recurrent impulses to burn; inferiority complex.

T. H., aged 45, general labourer, convicted *for setting fire* to a haystack after four convictions for arson and 14 for malicious damage.

Family History.—A maternal aunt was in an asylum and his maternal grandfather was paralysed. A sister suffered from hysterical fits. There was no history of epilepsy or intemperance.

Personal History.—The prisoner was the second child in a family of five; when 6 months of age his house caught fire, but none of the family sustained any injury. He left school in Standard VI. and was in fairly regular employment as errand boy until 19 years old, since when he has worked intermittently as a general labourer. During the war he *served for three years in Egypt, being employed chiefly in* the cook-house, and *after* demobilisation in 1920 he did odd work until 15 months before the *present* offence. He was a teetotaller and he denied syphilis. He was unmarried. In 1921 he had an attack of acute rheumatism. There was no history of fits and he had never been in an asylum. As *a boy he did not get on well at home and when, at the age of 19, he ran away he was told that he need not return.* He was frequently in trouble for playing with fire. Soon after he ran away he became destitute, and he then began his career of incendiarism and wilful damage which has continued with short intervals up to the present time. He admitted that he broke windows *in order to get into prison.*

For 15 months before the present offence the prisoner lived on unemployment pay. He alleged that a fortnight before the arson he began to feel depressed and restless. He attributed this to being out of work. He stated that *he then felt, as before, a desire to set light to a rick. Arson* of buildings *did not attract him as a house did not blaze so well!* He was not in debt or in trouble of any kind. He walked out into the country and while crossing some fields he threw away his match box in order to overcome his desire to burn, but he subsequently returned and found it. He then set fire to the rick and waited until *he was arrested.* He did *not know the owner of the property.* He admitted to a feeling of relief after he had committed the offence.

His previous convictions were all of the same character. On several occasions he had given himself up to the police and pleaded guilty at the trial. He described the present offence frankly and he added that in similar circumstances he would *repeat* it, well knowing the nature and quality of the act and that it was wrong. The prisoner asserted that when at work he was not subject to attacks of depression with the accompanying desire to do an incendiary act, and that he was contented in prison, where he was given very *simple* work, because the employment was *regular.* His general knowledge was poor. With intelligence tests he reached the level of 14 years. He was suggestible and of a low type physically and mentally, but he was even-tempered, well conducted, and persistent in application while in prison. A mitral bruit and signs of old pleurisy were found.

2. Feeble-minded; malingering loss of memory; indifference as to the effect of the crime on others; revenge.

J. E. S., aged 30, labourer; charged with setting fire to five ricks, and suspected of rick-firing in the same neighbourhood for two years before arrest. The family history was negative.

Personal History.—*The prisoner left school* in Standard I. and worked as a hay-binder until joining the army in 1914. He stated that while in France he had an injury to his head but that he was not in hospital or otherwise treated for it. On leaving the army he got work on a hand pump at 5s. a week. At the police station he admitted setting fire to the ricks, using oily rags, *adding that he went mad at times and was not responsible for his actions.* When examined he alleged that on one occasion he lost his memory for three days, and that at another time he found himself 13 miles from home without knowing how he got there. He recollected going to the rickyard on the present occasion and that he was smoking a pipe. He stated that he then fell down and dropped the pipe. *When he came to himself 10 minutes later he found the ricks burning.* The *accused* then went home. He added that one rick belonged to his father's employer, another was the property of his own master, and he could not remember about the remainder. He denied, however, that he had any grudge against the owners, but he complained that ex-Service men had not been fairly treated *as* work was not *found for them.*

He had no previous convictions, there was no history of intemperance, and he had never been in an asylum. He could not read or write. His mental age was about 7½ years. His general knowledge was poor—he could not tell the time, and he was unable to give change or do simple arithmetical sums. There was no scar on the head. His physical condition was good, but the Wassermann test was doubtful.

In view of the conflicting accounts which he gave of the offence, the unconvincing description of the alleged attacks of loss of memory, and the fact that the rick-firing took place at several spots in the neighbourhood, and probably over a considerable period of time, the loss of memory was not regarded as genuine.

3. Subnormal; feeling of inferiority.

G. S., aged 37, labourer; charged with setting fire to two wheat stacks. There was nothing of note in the family history.

Personal History.—The prisoner was the illegitimate child of a domestic servant. He was brought up from the age of 3 months by a foster-mother. He left school in Standard V. and afterwards worked as a farm labourer. In 1908 he was sentenced to three years' penal servitude *for setting* fire to a rick, the offence, he stated, taking place while he was drunk. Five months after discharge he repeated the offence. He was out of work at the time and had been drinking. He was sentenced to four years' penal servitude. He served in the *army for* two years, and during that time *he was thrice convicted for theft. Four months after leaving* the army he was sentenced to four years' penal servitude for stealing money, and four months after the completion of his sentence he committed the present offence. During the interval between his discharge and re-arrest he was out of work and living with his sister. There was no history *of syphilis, epilepsy, or insanity. He was unmarried.* Although a heavy drinker, he denied that he was under the influence of drink at the time of the offence.

The crime with which he was charged took place during a journey into the country. At 3.30 A.M. he made his way *across some fields and set light to the stacks,* after which *he walked several miles in order to give himself* up to the police. He stated that he committed the offence in order to get into prison, where he was more contented than when outside, because he there associated with his equals. In prison he was quiet and well behaved. His general knowledge was fair and he had a mental age of about 10 years.

General Paralysis.

J. S., *aged 50; charged with setting fire to a haystack.* The family history was negative. This man was in regular employment at a high rate of wages until a year or so before the date of the offence. Employment then became more difficult to obtain, and the accused's earning capacity gradually declined. For several months before his arrest he had *no* work. He had *never been in prison before.* There was no history of fits or insanity. He denied having had syphilis. He was married and had three children, the youngest one being 10 weeks old. He denied sexual excesses. There was a history of recent whisky drinking. He had been *suffering from* pains in the head for two months before the offence. His account of the crime was *confused*, but it appeared that after watching a football match in a field near his house he threw a lighted match into some dry grass, and although he admitted that he saw the fire spread to the rick, he went home without troubling to put *it out.* He was arrested five minutes later. *The prisoner had* delusions of exaltation concerning his vocal powers. While under observation he was found to commit petty thefts in the ward, and he was seen to put urine in his food on two occasions. The Wassermann test was positive. Argyll Robertson pupils, *exaggeration of the* knee-jerks, and other confirmatory signs were present.

The act is an illustration of the utter disregard for consequences to himself or to others which is commonly seen in the delinquencies of general paralytics.

injected subcutaneously in these cases but they cause pain and swelling at the point of injection and are valueless

The methods of administering camphor, proposed by Leo and by Fischer, by intravenous injection in very dilute aqueous solution or oily solution have not stood the practical test. Certainly these methods have not yet attained universal acceptance, and the risks incurred in their use are certainly not a *quantité négligeable*

The disadvantages of the purin derivatives as analeptics are sufficiently well known, so that we need not enter upon a discussion of their pharmacological demerits here

It therefore follows from the above considerations that every new addition to the number of available analeptics in the sense above defined must be reckoned a decided gain in therapeutics It is for this reason that we have in the course of the last few years studied a number of organic compounds whose chemical constitution promised to further the materialisation of our wishes We have investigated a large number of derivatives of camphor and have found that among the derivatives of camphoric acid there are such compounds to be found whose pharmacological actions approximate very closely to those of camphor itself—e g, camphoric acid diethylamino ethyl imide At the same time our researches have led to the discovery that certain carboxylated pyridine derivatives, in spite of the absence of ring substituting aliphatic radicles as are found in the case of the camphor molecule, do nevertheless show in animal experiments many actions closely allied to those produced by camphor itself Among the bodies of this particular group we have found that pyridine β carbonic acid diethylamide has in man and other warm blooded animals, the desired camphor like actions in the most pronounced degree Before entering upon a discussion of the pharmacology of this substance we will mention its principal physical and chemical properties

Pyridine β Carbonic Acid Diethylamide

Pyridine β carbonic acid diethylamide is a viscous, faintly coloured, almost inodorous liquid which distils over at a temperature of 150° C at a pressure of 2 mm Hg It is easily soluble in water in every proportion also soluble in the usual organic solvents The aqueous solution is tasteless

Pharmacological Data—1 *Action on Normal Animals*—After injection of an aqueous solution (1 c cm) of 0 1 g pyridine β carbonic acid diethylamide into an ear vein of a rabbit, one notes that the animal shows almost immediately decided signs of its stimulating effects Most apparent and striking is the *increase in the respiratory rate* The animal, previous to the injection quiet and dull and indifferent to its surroundings, soon appears excited, jumps and leaps about, rises up on his hind feet, and appears abnormally interested in its environment At the same time it appears timorous On touching the animal with a stick it is liable to become aggressive Touching its nose or whiskers results in efforts at self defence, unwarranted by and out of all proportion to the intensity of the mechanical insult offered At the same time one notes decided signs of increased reflex irritability In male animals the sexual instincts and functions seem abnormally stimulated and augmented After a lapse of from 15 to 20 minutes the action reaches its climax, thereupon respiration slows down and becomes again approximately normal, the tremor previously noted disappears, and the general excitement abates

If the doses injected are increased then after 10 or 15 minutes convulsions come on In the initial stage these appear first in the form of twitchings in the muscles of the jaws and facial muscles (trismus) At the same time, or very soon after, there is a marked bending backwards of the head (opisthotonos) Finally, general convulsions supervene and these clonic tonic convulsions are very similar to those produced by camphor Sometimes there are remissions whereupon the convulsions *may again set in* In such cases the animal may succumb in consequence of respiratory standstill If the animal survives, there *may follow another attack of convulsions, weaker than the last, and then* recovery usually ensues

In dogs similar phenomena are observed Here also is noted an increase of respiratory rate and in some cases as with rabbits, signs of decided cerebral excitement. As regards increase of reflex irritability and convulsant action dogs appear more sensitive than rabbits

In guinea pigs mice and rats the action is qualitatively the same as in rabbits We would *call special attention to* the fact that in frogs pyridine β-carbonic acid diethylamide acts as a paralysant and herein shows a further pharmacological analogy with camphor

Subcutaneous injections of pyridine β carbonic acid diethylamide result in exactly the same phenomena, which, *however naturally* set in somewhat later

We desire to emphasise that *stomachic introduction* of this substance readily and quickly causes exactly the same symptoms This fact is of practical therapeutical interest and importance, inasmuch as it shows that resorption of pyridine β carbonic acid diethylamide from the intestinal tract is accomplished quickly, and that therefore this substance can be given for therapeutical purposes per os with exactly the same effects as when injected intravenously or hypodermically

2 *Action of Pyridine β Carbonic Acid Diethylamide on Blood Pressure*—Rabbit, body weight 2 3 kg, curarised, artificial respiration Average blood pressure before giving, 98 mm Hg Intravenous injection of 20 mg pyridine β carbonic acid diethylamide caused rise of blood pressure from 98 to 130 mm Hg

3 *Blood Pressure and Respiration*—Rabbit, urethane hypnosis Initial blood pressure 85, rose to 120 mm Hg after three injections of ⅛ gr, ¼ gr, and ⅛ gr each Respiration before injection of pyridine β carbonic acid diethylamide, 30 per minute, after five minutes 48 per minute

In another experiment the blood pressure rose from 80 to 120 mm Hg, and respiration increased from 40 to 58 per minute after two injections of ⅛ gr and 3 gr each (Compare Fig 1)

4 *Action on the Frog's Heart*—Pyridine β carbonic acid diethylamide causes *slowing of the pulse rate* and *increase of pulse volume* It diminishes and finally overcomes the depressant action of alcohol, chloral hydrate and chloroform on the heart (Compare Fig 2)

There is no digitalis like action The new drug is, however, compatible with injectible digitalis preparations and may therefore be injected simultaneously *and in the same syringe with these, if thought desirable* I have been informed that remarkable results have been obtained by substituting pyridine β carbonic acid diethylamide for digitalis in the later stages of digitalis treatment Atropine does not alter the character of the action of pyridine β carbonic acid diethylamide on the heart

It is evident that the above action of pyridine β carbonic acid diethylamide on the heart must result in better *filling of the arterial* system

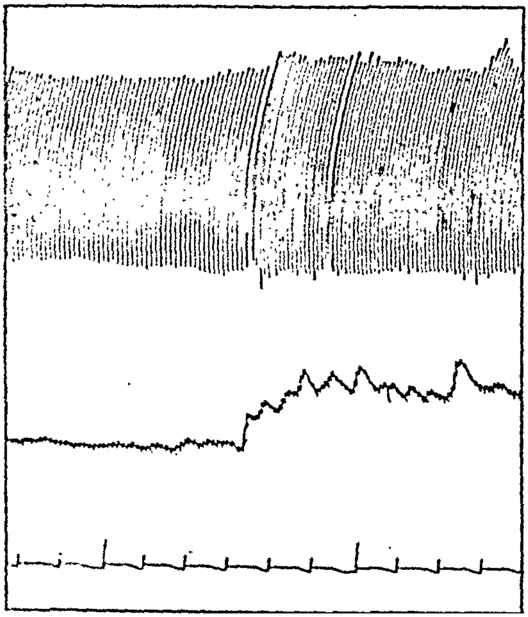
5 *Action of Pyridine β Carbonic Acid Diethylamide on the Respiratory Volume*—I have been able to show by animal experiments that not only is the respiratory rate increased by pyridine β carbonic acid diethylamide but that at the same time the respiratory volume is also increased Illustrative of numerous experiments conducted on rabbits may be quoted the following —

After injection of 50 mg pyridine β carbonic acid diethylamide the respiratory volume rose from 350 to 440 c cm and again after further 50 mg pyridine β carbonic acid diethylamide to 490 c cm Thereupon the respiratory volume was reduced to 200 c cm by intravenous injection of 50 mg morphine Injection of 50 mg pyridine β carbonic acid diethylamide raised the respiratory volume from 100 c cm (morphine action) to 300 c cm —i e approximately the normal respiratory volume (Fig 3)

6. *Action on Blood-Vessels.*—(*a*) Using a Krawkow preparation of the isolated rabbit ear, it can easily be demonstrated that small doses of pyridine-β-carbonic acid diethylamide—for example, ½ c.cm. of a solution 1 : 1000 or ½ c.cm. of a solution 1 : 100 *contract the blood-vessels*, whereas larger doses—½ c.cm. of a solution 1 : 10—cause vaso-dilatation. (*b*) The same phenomena may be observed after intravenous injection of pyridine-β-carbonic acid diethylamide in a rabbit whose blood pressure was previously lowered to 40–70 mm. Hg by means of chloral hydrate. The blood pressure rises rapidly to 80 mm. and mounts steadily to almost normal pressure—i.e., approximately 95 to 100 mm. Hg.

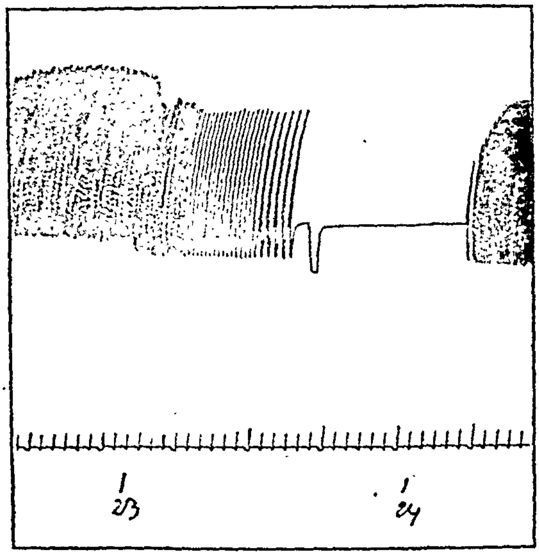
7. *Action on Smooth Muscle.*—In this connexion it is of interest and important to note that smooth muscle is stimulated by pyridine-β-carbonic acid diethylamide as demonstrated in the following

FIG. 1.



5. As compared with strychnine, it has the great advantage that its main action is exerted principally on the automatic centres in the medulla, while strychnine acts mainly on the spinal cord. Another advantage over strychnine is the fact that pyridine-β-carbonic acid diethylamide is *devoid of cumulative action.*

FIG. 2.



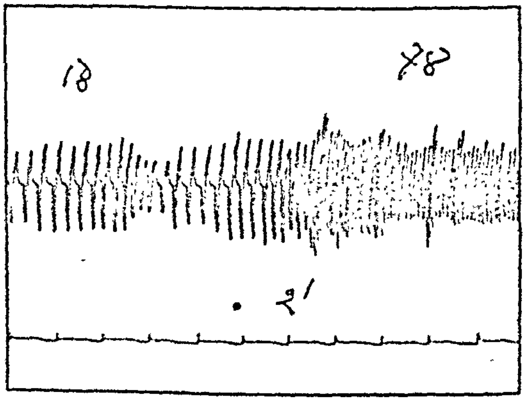
Frog's heart on Straub cannula, holding about 1 c.cm. At 23 normal; thereupon 1 c.cm. chloral-hydrate solution 1 : 5000. Heart stops at 24. 1 c.cm. pyridine-β-carbonic acid diethylamide 1 : 5000. The heart begins to beat again at once and soon attains normal pulse-rate and pulse-volume.

6. Note also the peripheral action on smooth muscle, resulting in vasoconstriction and thus causing further rise in blood pressure.

Pyridine-β-carbonic acid diethylamide shows a wide therapeutic range, that is to say, the *effective therapeutic dose* is far below the toxic dose, and the toxic dose is again far below the lethal dose. To quote figures, the following example :—

Effective intravenous dose for rabbits	0·005 g. to 0·01 g.
Toxic dose for rabbits	0·10 g. to 0·12 g.
Lethal dose for rabbits	0·20 g. to 0·30 g.

FIG. 3.



Rabbit, body-weight 2·55 kg. Intravenous injection of 0·01 g. morphine-HCl. Respiration-rate drops to 18: at 2 intravenous injection 0·05 g. pyridine-β-carbonic acid diethylamide. Respiration-rate rises from 25–35 to 78.

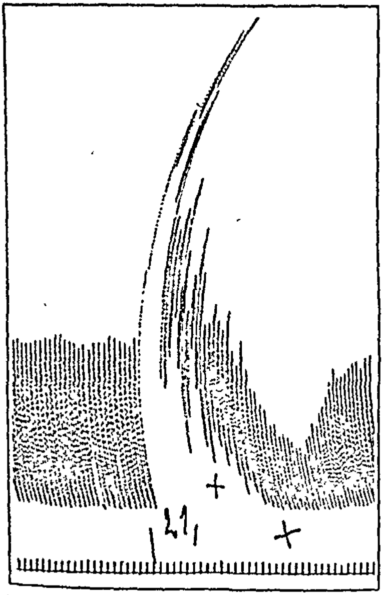
I therefore hold that pyridine-β-carbonic acid diethylamide bids *fair* to prove a valuable substitute not only for strychnine, but also for camphor and caffeine, inasmuch as its stimulating action is exerted equally and simultaneously on the central nervous system and on the circulatory and respiratory apparatus. It is also evident that a substance endowed with pharmacological properties, as above described, should prove a valuable "tonic" in the general sense of the word.

Records of Clinical Use of the Remedy.

Pyridine-β-carbonic acid diethylamide (designated P.) has been used with success in the cases here given :—

CASE 1.—Woman, aged 50. *Emphysema.* Dilatation of right heart with arrhythmia and extreme cyanosis. P. was given intravenously, beginning with 0·5 c.cm. and increasing up to 2 c.cm. Result: *Rapid improvement of symptoms* of cardiac insufficiency—cyanosis and dyspnœa. Was able to sleep at night. On discontinuing the treatment cyanosis and dyspnœa returned. Immediate improvement on further injections of P. No marked effect on blood pressure noted. The patient had 2 c.cm. P. twice daily for a fortnight without untoward symptoms, and improved so far as to be able to leave her bed and to show no further symptoms of cardiac insufficiency. While P. was used no other heart stimulant or tonic was given.

FIG. 4.



Rabbit gut; Tyrande bath 100 c.cm. Addition of 0·01 g. pyridine-β-carbonic acid diethylamide causes increase of peristaltic movements and tonus.

CASE 2.—Patient, aged 25. Heart failure (muscular insufficiency) with venous engorgement. P., 1 c.cm. twice daily, was given for a week. Marked improvement. Blood pressure unaltered. Patient requested continuance of treatment.

CASE 3.—Patient, aged 60. Cardiac insufficiency (muscular). Passive bronchitis. P. given, 2 c.cm. twice daily for several days. Marked improvement, subjective and objective after each injection, but good results were transient and patient died.

CASE 4.—Patient, aged 67. Cardiac insufficiency, the result of granular contracted kidney. Œdema very pronounced. Pulse-rate 120. Blood pressure (Riva Rocci) 180–110. Patient reacts well to digitalis, after which pulse-rate is reduced to 60. Blood pressure rises to 200/110. Sudden rise of temperature; hæmorrhagic lung infarct. Digitalis discontinued and P. given instead, intravenously, 1 c.cm. twice daily. Patient stands this change of treatment very well. No increase in pulse-rate, which remains at 70–80, while pulse full and strong. Later on digitalis given again with good results.

CASE 5.—Patient, aged 33. Broncho-pneumonia, measles. High temperatures during a fortnight. Bilateral pulmonary foci. Patient receives 1–2 c.cm. P. intravenously *pro die*, and does exceedingly well under this treatment. Blood pressure remains at 115–120. No signs or indications of heart failure whatever.

CASE 6.—Patient, aged 53. Coronary sclerosis, arteriosclerotic affection of the myocardium. Severe dyspnœa even after only slight exertion. Feeling of oppression in the præcordia; of weight and constriction of chest. No œdema; no irregularity of the pulse. Pulse-rate between 80 and 90. Patient is given 1 c.cm. P. daily for a fortnight, with much apparent benefit. *Result: Dyspnœa diminished.* Patient feels well and more active. Pulse-rate unchanged but quality much improved.

CASE 7.—Patient, aged 85. Myocardial degeneration. Pulse accelerated, irregular. Intravenous injection of 1 c.cm. P. Result: Immediate improvement. Pulse becomes at once fuller, slower, and more regular. Continued injections of P. for a longer period of time result in decided and continued improvement.

CASE 8.—A. K., aged 35, brought in cyanosed and in a dying condition. Pulse quick and hardly perceptible. Intravenous injection of 1 c.cm. P. Heart action revived immediately. After a second injection further improvement, and finally normal circulation attained.

CASE 9.—Man, aged 50. Heart insufficiency (failure) following profuse pulmonary hæmorrhage. Intravenous injection of 1 c.cm. P. resulted in immediate improvement of collapsed condition. Pulse becomes stronger and fuller. Circulation equally improved.

PS.—Since this article was written favourable results on the use of P. in surgical cases have been reported from the surgical clinic of the University of Heidelberg (*Münchener Medizinische Wochnschrift*, No. 11, p. 562, 1925).

"SMALARINA" IN MALARIA.[1]

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THROUGH the kindness of Sir Ronald Ross our attention was drawn to some literature on the treatment of malaria by Prof. Cremonese's preparation of mercury sold under the name of "Smalarina." We therefore decided to give three patients suffering from malaria the opportunity of being treated with the drug.

"*Smalarina*" ($C_8H_{13}O_7N_4HgSb$) is put up in the form of small white tablets, and is administered before breakfast on an empty stomach. The course starts with a dose of one tablet, and successive doses are given on alternate days, increasing the amount by one tablet each time until the maximum dose of 16 tablets given on the thirty-second day completes the treatment. To give the treatment every chance, the patients were kept in bed throughout—two of them, indeed, were unfit to be up—but in spite of this the drug had no effect on the fever, nor did it abolish the parasites or change their appearance in any way. One patient had benign tertian, two malignant tertian.

CASE 1.—Male, aged 40. Returned from East Africa in November, 1921. Admitted to hospital, Dec. 8th, 1924. Had suffered off and on from malaria; present attack began six weeks *prior* to admission. Had been ineffectually treated with quinine.

Condition on Admission.—Ill and anæmic; vomiting; perspiring very freely; very weak; temp. 100·2° F. Spleen

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[1] A paper read at the meeting of the Royal Society of Tropical Medicine and Hygiene on June 18th, 1925.

were sometimes numerous, persisted throughout the whole course of treatment without showing any degenerative change. Quinine and arsenic established a rapid convalescence after the Smalarina course was over. (Table III.)

It will thus be seen that :—

1. "Smalarina" was tried in one case of benign tertian and two cases of malignant tertian malaria.

2. In no case did the parasites alter or disappear for good until the usual quinine treatment was started.

3. In no case did the drug control the fever; *per contra*, this became so grave in two cases that quinine was required.

4. "Smalarina" appeared to have absolutely no effect of a beneficial nature.

We are greatly indebted to Dr. W. E. Cooke and Mr. F. W. Foster for their skilled assistance in the blood examinations; also to Sir Ronald Ross for giving us the drug to try.

Reference.—Monograph, "Malaria," by Prof. Guido Cremonese.

Clinical and Laboratory Notes.

A CASE OF FUNCTIONAL EPILEPTIFORM SEIZURE WITH BABINSKI REFLEX.

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According to Dr. F. M. R. Walshe[1] and to other neurologists, the presence of a double Babinski reflex in a patient during a fit proves that the attack is epileptic. The history of the following case may be of some interest in this connexion, as it seems to indicate either that this reflex may be associated with a convulsion of psychogenic origin or that recurrent epileptic manifestations may have a psychogenic basis.

The patient, a woman of 21, had a fit during lunch. She had finished her meal and got up from the table, and when she had taken a few steps across the room she suddenly fell and was found to be completely unconscious. She was seen almost immediately by my colleague, Dr. A. G. Duncan, who made such neurological examination as was possible and has supplied the following observations.

When seen within a minute of the onset, patient was lying motionless on her back with flushed face and lips slightly cyanosed. Respiration was a little quickened and slightly stertorous, the jaw was not clenched, and there was frothing at the mouth. The eyes were closed, there was no resistance to separation of eyelids, and conjunctival reflexes were absent; the eyes were deviated to the left and slightly upwards, the pupils being widely dilated. The head was turned to the left but there was no tonic contraction of muscles of neck. The limbs were flaccid; knee-jerks were both very brisk. The plantar reflex was definitely extensor on each side, and on the right side movement of the toe was accompanied by slight flexion movement at hip and knee. Pulse rate between 70 and 80.

Within four or five minutes the patient showed signs of returning consciousness by drawing up the right leg and opening her eyes. Full consciousness was regained rapidly, and presently she smiled, and in answer to a question said that she felt all right. She made no spontaneous remark and did not appear to be confused or at all disturbed by the fact that she had been unconscious.

History.—The patient had had previous fits. There was nothing abnormal in the physical condition; reflexes were quite normal. The first of these fits was associated with the breaking off of affectionate relationship with a friend with whom she had been living in rooms for two years, both of them doing work in the same office. Early in 1921 the friend became engaged and there followed for the patient a period of mental distress. In July it was arranged for the friend to go and spend a week-end with her fiancé's relatives. The patient was very miserable at being left alone, and her distress was increased by the fact that two nights previously she had spent an evening in the company of the engaged couple for the first time, and although she had been aware of the engagement for some time, she had not until that evening allowed herself to think of it as an actual fact. On the arranged day of parting the two friends started out to travel to town by train as usual. As soon as the patient entered the train she felt sick and hot, and at the first station the friend took her out on to the platform with the idea of taking her back to their rooms. The patient remembers quite well that she resisted the efforts of her friend, saying that she was too sick and ill to move and could not be left, and it was after 1 o'clock before she would leave the station. She was aware that by delaying long enough she might prevent her friend going for the week-end. The patient was left under the care of the landlady and the friend immediately left for her visit. The patient still remembers her intense mental agony at being left alone and also her conscious longing for complete forgetfulness. In the afternoon what was described by the landlady as a fit took place, and the patient was unconscious for several minutes. Several fits occurred that evening and during the following morning. Next day the patient was taken to a cottage hospital. She was there for a fortnight and had no attacks at all, but she says she slept nearly all the time and remembers little except her bitter annoyance with anyone who came and tried to talk to her or to wake her up to take food. She only longed to die. After leaving hospital she gave up work and went home, but still got daily letters from her friend. She had another attack two months later, associated with the fact that the anniversary of her birthday passed without any token of remembrance from her friend, whose letters also were beginning to become a little irregular. During the next two years, up till 1924, there were occasional attacks of no periodical occurrence, but always associated with some emotional stress connected with this friendship.

Treatment.—The patient came under my care six months before the present attack. The psychological meaning of the attacks was explained to her and she was urged to break off all correspondence with her friend, who had now been married for some time. This she did. At the same time all drugs were stopped. The patient had had bromide or luminal continuously during all these years. There was no recurrence of the attacks.

There was evidence that a fresh affectionate relationship had lately been established, which was just on the point of being broken off, as the patient was leaving for another part of the country, and the date of departure was just fixed on the day previous to the attack when the patient was seen by Dr. Duncan. The patient acknowledged that she had conceived the idea that she might prolong her stay at hospital by having an attack, and she was suffering at the time from acute mental pain and almost praying for unconsciousness.

The patient is an emotional girl of extremely affectionate nature, not given to outward display of feeling, and she could seldom find relief in tears. It is hard to think that this train of psychological events had no bearing on the onset of the attacks. If the presence of the extensor reflex in a patient who has just had a fit is to be considered as pathognomonic of true epilepsy, might it not be apt to be used by an observer as an excuse from the long tedious task of making a detailed psychological examination, which in this case has revealed so much material for consideration?

BRONCHO-MEDIASTINAL FISTULA IN POTT'S DISEASE.

By C. Cameron, M.D., F.R.F.P.S. Glasg.,
MEDICAL SUPERINTENDENT, S.E. COUNTIES OF SCOTLAND JOINT SANATORIUM, EAST FORTUNE.

The anatomical course that a vertebral abcesss may follow is always interesting; but the actual evacuation of such an abscess through the respiratory tract is of sufficient rarity and interest to justify its recording. Additional interest is added to this case by the accident which led to the elucidation of the complete history.

J. P., aged 21 years, was admitted to East Fortune Sanatorium on Dec. 8th, 1924. No history of his previous health or of the condition for which he was admitted was sent with him. His own statements alone were available.

He was a hunchback, and stated that the deformity had been present from his earliest years. It had incommoded him, but had not made him an invalid. He completed a normal school course, and made his living as a clerk, working until the latter part of 1923, when, without any previous pain, a swelling appeared in the upper part of the right thigh. He was admitted to the Deaconess Hospital

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[1] The Lancet, Jan. 10th, 1925, p. 65.

Medical Societies.

ROYAL SOCIETY OF MEDICINE

SECTION OF OPHTHALMOLOGY

Exhibition of Clinical Cases

A MEETING of this Section was held on June 12th, Sir ARNOLD LAWSON, the President, occupying the chair.

Exudate in Retina

Dr RAYNER BATTEN showed a man, aged 61, with a massive exudate in the right retina and some exudative changes in the left. Three years ago he had an extensive vitreous hæmorrhage in the right eye and some retinal hæmorrhages and white patches in the macular area of the left. The blood pressure was reported as varying between 85 and 135 mm Hg. There was no albuminuria or glycosuria, the central nervous system was normal, the Wassermann negative, and there were not present the cardio vascular changes usual in retinal disease. The condition had been slowly increasing. He showed a drawing of a case of retinitis circinata for comparison with the illustrations of this case which he projected on the screen.

Cerebral Tumour Compressing Optic Tracts

Mr LINDSAY REA related a fatal case of cerebral tumour which had compressed the optic tracts, chiasma, and nerves. The tumour was 10 mm in diameter, yet the only symptom it produced was sudden blindness of the right eye. When Mr Rea saw the patient there was the barest perception of light in that eye, but several who examined him failed to detect anything abnormal in the optic disc or in the calibre or appearance of the vessels. Neither did rhinoscopic and neurological examination give any results. A fortnight ago the speaker saw the beginnings of a papillœdema in the left disc. A skiagram revealed a flattened sella turcica. One of the sphenoidal sinuses had eroded through the bone, and two days later the man died of a spreading meningitis which had extended from the base over the brain substance. The patient had never shown any signs of nausea, and he was only giddy once momentarily. The right optic nerve had been pushed across to the left side and the left optic nerve showed a slight papillœdema. The post mortem examination and the drawing were made by Dr Carnegie Dickson.

Dr CARNEGIE DICKSON said he thought the tumour probably arose from the pituitary; the specimen had not yet been sectioned.—Dr A FEILING said that at the request of Mr Rea he saw this patient early in January, and at that time he could find no reason for the loss of vision in the right eye. He presented none of the symptoms of an intracranial lesion, nor anything suggestive of endocrine disturbance. In fact, he raised the question whether the alleged loss of vision was genuine.—Mr FRANK JULER asked whether there were pupil changes in the early stages of the case. Four or five months was a long interval before optic atrophy took place.—Mr J H FISHER discussed the probable causation expressing the view that there might have been no obvious or gross erosion of the sella turcica, but that there was an unusual anatomical arrangement of the cavernous sinus on the right side which enabled the growth to extend without much opposition. There was gross stretching of the right optic nerve, and this stretching had probably produced the early blindness, rather than a compression of those fibres between the tumour and any bony structure at the base of the skull.

Mr REA replied that originally the optic nerves were in their proper anatomical relationship, but the sella turcica was eroded and flat. There was no disturbance of the visual field in the left eye, and there had been no approach to hemianopia in the good eye.

Pulsating Exophthalmos—Epibulbar Sarcoma

Mr A. F A LOOSELY showed a patient with a pulsating exophthalmos. When he saw the case there was a history of six months' diplopia and weakness of the external and inferior recti. In each eye the vision was 6/6 with correction. When he saw the case a fortnight later the eye was protruded and the lids were so brawny that the eye could not be seen. There was a bruit which could be heard by others as well as by the patient. The condition had developed in less than a week. Three days later a surgeon tied the external and internal carotids, with much benefit.

Mr GEOFFREY VINER showed a woman, aged 31, who had complained of a black spot in the left eye, which had been increasing in size for nine months. He based his diagnosis of epibulbar sarcoma chiefly on the result of the slit lamp examination. This showed that the pigmentation was extending not only on to the cornea, but also to the substantia propria.

Sir JOHN PARSONS considered the lesion was probably a pigmented nævus or mole of the conjunctiva. It was very unusual for these to become malignant. Still, there were several peculiarities in the case which required caution, and he suggested removal of the superficial layers of the cornea and microscopical examination of them before deciding on anything radical.—Mr ERNEST CLARKE agreed with Sir John Parsons.

The Operative Treatment of Dacryocystitis

Mr G H POOLEY (Sheffield) read a paper on this subject. He said that in a large industrial area, like that of Sheffield, a large number of cases of dacryocystitis presented themselves for treatment, and as some came considerable distances and had household and other duties to attend to they could not be dealt with as out patients. The condition was commoner in women than in men, in the proportion of about 4 to 1. The defects to be dealt with might be classified as follows: Stenosis of the puncta; stenosis of the canaliculi just before they joined the sac; obstruction in the sac itself without retention or regurgitation of inflammatory products; obstruction with retention of inflammatory products which, on digital pressure, passed down into the nose; and obstruction in which the inflammatory products passed on pressure up through the puncta into the conjunctival sac. In all these cases inflammation seemed to be confined to the interior of the sac. In a large and more serious group the tissues round the sac became acutely inflamed, and in many there was an abscess formation and death of bone. Many of these presented large red swellings. Sometimes these latter had burst externally before an ophthalmic surgeon saw the case. Obstruction of the sac without regurgitation could be kept quiet without operation. When the contents could be squeezed down into the nose all that was required was repeated digital pressure by the patient, combined with the use of antiseptic lotions. Distensions of the sac with regurgitations on pressure could be incised after injection with an antiseptic dye. A permanent drain inserted into the middle meatus of the nose prevented epiphora. Most trouble was caused by the suppurative cases. For some time he was content to incise and drain these cases, after which they were fomented. The results were fairly satisfactory, but in many patients abscesses subsequently formed, probably occasioned by dead bone. Next he tried incision of the inflamed sac, removal of the lacrymal ethmoidal cells, and scraping of the duct. This gave fairly good results, and many of the patients were free of epiphora, but some were troubled by it. There was no epiphora in the cases in which he had made a free opening into the nose. Then he commenced making an opening through the sac into the middle meatus of the nose, scraping out the sac and granulations and leaving a ribbon of gauze in for three days. On the removal of that, two fishing gut sutures which had been inserted at the time of the operation and left unfastened were tied, and the edges of the skin

medical cases, particularly for females and children, an increased number of special department beds for orthopædics, diseases of the eye, ear, nose, and throat. In conclusion of a general review on local provision, he showed that it was, as a whole, a striking example of confused, uncoördinated effort resulting in much waste of money and inefficiency of service. It was a duty of the medical profession to help at this juncture, and if they gave of their best to the community they need not fear in respect of their dignity, status, or remuneration.

Dr. Llewellyn Williams said that the voluntary hospitals were hardly able to carry on in 1920 and 1921 and appealed to the Government to give them financial aid to help them out of their difficulties. A Government grant of £500,000 was made to these hospitals to prevent disaster. This money was distributed through local voluntary hospital committees. The distribution of this grant was completed by March 31st, 1921. The total grant for Wales was £22,098, and of this sum Glamorgan received £15,522. If we were all agreed that the voluntary system should be maintained, he asked what steps should be taken to provide these hospitals with an adequate income? Provision had already been made by the State and local authorities for persons suffering from diseases that were considered to be a danger to the community—infectious diseases, venereal diseases, and tuberculosis. Provision would also be made for crippled children up to the time they left school. Maternity hospitals also received considerable help. Nevertheless, the problem of funds was still, and always would be, formidable. An important factor, bearing on the possibility of continuing the voluntary system, was the very marked increase which has taken place in recent years in workpeople's contributions; further, there might be a possibility of extending the National Insurance Act to include hospital treatment. The alternative was assistance by central grant or local rates, with the necessary corollary of participation in administration. There was one defect in the voluntary system, he said—namely, the want of coöperation between existing hospitals; they were not part of a connected system. The smaller hospitals should be linked up with the big hospitals and used as casualty clearing stations, and possibly recovery beds. Until these hospitals were brought into some definite relationship with the big city hospitals, they were not used to the best advantage.

With regard to the relation between voluntary hospitals and Poor-law hospitals, speaking broadly, the voluntary hospital should deal with the acute case requiring specialised surgical or medical treatment, while the Poor-law hospital should deal primarily with the case in which the main need was skilled nursing and the kind of attention which cannot be given in the patient's own home. If we accept this principle, we should have to face the difficulty that a hospital could not concentrate entirely on the treatment of "chronics" without prejudicing the efficiency of the medical and nursing staffs. It was, however, essential that the voluntary and Poor-law hospitals should to some extent work together.

He was inclined to the view that the *local* hospitals should, as regards medical staff, be open to the medical men practising in that district, and should not be limited to a number of men, who are not necessarily the best men. There is a great deal to be said for admitting every doctor in the area who is prepared to take his share of the hospital work. At the same time, it would be a great advantage if physicians and surgeons of consultant rank from the large hospital were appointed as consultants to the local hospitals; further, it is the obvious duty of a hospital like the Cardiff Royal Infirmary that it should develop into a centre for post-graduate teaching and research work for the surrounding neighbourhood.

The following took part in the discussion: Dr. Bruce Low, Prof. A. W. Sheen, Dr. D. R. Paterson, Mr. H. G. Cook, Dr. Ivor J. Davies, Mr. T. E. Hammond, Dr. J. O'Flynn, and Dr. Melbourne Thomas.

Reviews and Notices of Books.

MANSON'S TROPICAL DISEASES.

A Manual of the Diseases of Warm Climates. Eighth edition, revised. Edited by Philip H. Manson-Bahr, D.S.O., M.D., D.T.M. & H. Camb., F.R.C.P. Lond., Physician to the Hospital for Tropical Diseases, London, and the Albert Dock Hospital. London: Cassell and Company, Ltd. 1925. Pp. 893. 31*s.* 6*d.*

Since the last edition of this book in 1921 the medical profession and that section of it particularly dealing with tropical medicine has had to deplore the death of its original author, Sir Patrick Manson. The eighth edition, which now appears, has been drastically revised; much new material, both in the text and as illustrations, has been introduced without, however, adding to the size of the book, which is actually shorter by some 70 pages. The practitioner in the tropics has often to be a jack-of-all-trades. He must be a clinician with not only a knowledge of the special diseases occurring in tropical countries but also of those commoner in temperate climates. For example, when considering the diagnosis of a fever, as is pointed out in a very interesting chapter on this subject, he must keep in mind the possibility of pulmonary tuberculosis, as well as the various suppurative conditions, while the curious periodic fever met with in the Pel-Ebstein type of lymphadenoma may also add to his diagnostic difficulties. Moreover, the practitioner in the tropics is frequently his own pathologist; in Section B of the appendix some 40 pages of small print and many illustrations give as good and as practical an account of the chief laboratory methods he is likely to have to employ as many a text-book of much greater size. In tropical regions, again, the subject of medical zoology becomes of great importance and the bulk of the appendix is devoted to this subject. This section has been completely rewritten for this edition and contains many new illustrations. Here it is especially praiseworthy to produce a readable narrative, for the nomenclature, already almost terrifying by reason of the multiplicity of types and species, is rendered even more confusing by the number of synonyms in existence. Some trematodes, for example, have as many as seven or eight scientific names, only one of which can presumably be valid under the rules laid down by the various international congresses. An entirely new feature of the present volume is the inclusion of six maps, which show the geographical distribution of trypanosomiasis, leishmaniasis, yellow fever, schistosomiasis, and filariasis.

This is a very useful addition to what is well recognised as a most valuable standard text-book on tropical diseases.

PHYSIOLOGICAL METHODS.

Handbuch der Biologischen Arbeitsmethoden, herausgegeben Geh. Med. Rat. Prof. Dr. Emil Abderhalden. Berlin: Urban und Schwarzenberg. 1923-24-25.

It is difficult to give an adequate account of a publication appearing, as this one, in a number of small parts, not always complete in themselves. We have received enough parts to be assured of the comprehensive nature of the work and of the laborious care which has been taken to ensure accuracy in detail as well as general perspective. It covers a wide range. For example, Lieferung 101 deals with every conceivable method of investigating the urine, and the matter is presented with laborious detail. Lief. 107 is concerned with the biological examination of certain food substances, honey, artificial sweetening agents, and sugar. In the 73 pages devoted to honey Dr. E. Spaeth records a striking amount of research into this substance; it would seem that honey might prove to be of great use in medicine if the knowledge contained in this

to illustrate the incisive way in which he deals with crucial problems.

"Matter as revealed by its gravitational phenomena manifests itself solely as a system of singularities in the metric system. There is no place left for the notion of substance either material or ethereal. It is sometimes said that space-time is crinkled or warped; this statement is liable to produce misunderstanding, at least when it is not properly qualified, and is in any case quite inappropriate. The fundamental manifold has no properties intrinsic to itself, except that of being ordered in accordance with an abstract conception of order. Hence it has no singularities which could be described as crinkles or warps. The singularities by which matter is manifested belong to the metric imposed upon the fundamental manifold from without and are *not intrinsic to the manifold itself*."

This little brochure is a model exposition of constructive criticism.

Joule and the Study of Energy. By ALEX. WOOD, M.A., D.Sc., *Fellow and Tutor of Emmanuel* College and Lecturer in Experimental Physics in the University of Cambridge. London: G. Bell and Sons Ltd. 1925. Pp. 88. 1*s.* 6*d.*

THE aim of the excellent series of "Classics of Scientific Method" is—

"to provide reproductions of the greater masterpieces of Science in convenient forms together with a complete account of the action and reaction of ideas which through the process of time led up to the crucial experiments carried out and described by some great master."

Dr. Wood has well realised this aim and Joule and the Study of Energy *is an excellent selection for* illustration. Dr. Wood takes the reader through the days spent by investigators in their search for perpetual motion, an idea so deeply ingrained that the failures of others only seemed to add zest to the pursuit. So much ingenuity but so little knowledge! Galileo's contribution to mechanical knowledge probably did more than anything to divert people from this vain quest. The bulk of this book is devoted to an account of Joule's life work. It is a fascinating record and brings before the reader the debt that science owes to a man of amazing accuracy. Finally Dr. Wood gives a brief review of natural sources of energy in which he dwells for a moment upon the stories of atomic energy which await release.

QUANTITATIVE ANALYSIS.

The Theory of Quantitative Analysis and Its Practical Application. By HENRY BASSETT, D.Sc., Ph.D. London: George Routledge and Sons, Ltd. 1925. Pp. 308. 15*s.*

IN the past analytical methods have in the main been developed empirically, and it remains to be seen whether this state of affairs will alter in the future. In the preface to this book it is stated that in most cases, now that theoretical knowledge has advanced sufficiently, it is possible to interpret the operations of quantitative analysis in terms of the general chemical laws, and to develop new methods if need be by their help, instead of empirically. Dr. Bassett explains that no attempt has been made to write a complete treatise on quantitative analysis, a stop having been made at the consideration of the physico-chemical principles at the base of analytical operations. Accordingly he has included chapters on electro-affinity, coordination and solubility, and complex ion formation. The book throughout bears the imprint of being written by an enthusiast, but perusal of its pages leaves us doubtful whether much is gained by the author's method of treatment. The average person making use of quantitative analysis for a definite purpose is more concerned with the exact conditions for effecting his purpose with accuracy than with the elaborate interpretation of these methods in terms of mass action, solubility products, and so forth. There may well be a public for the book, but it will not, we believe, be drawn from the ranks of those engaged in chemical analysis.

GYNÆCOLOGICAL NURSING.

Gynæcology for Nurses and Gynæcological Nursing. Fourth edition. By COMYNS BERKELEY, M.D., M.C. Cantab., F.R.C.P. Lond., Gynæcological and Obstetric Surgeon to the Middlesex Hospital. London: Scientific Press Ltd. 1925. Pp. 301. 7*s.* 6*d.*

A COMPLETELY revised and enlarged fourth edition of this handbook for nurses has just been issued under the auspices of the Press Committee of the Middlesex Hospital. It has been written for nurses preparing for the State examination, and new matter is inserted so as to include the subjects dealt with in the part of the advisory syllabus issued by the General Nursing Council which relates to gynæcology.

The book admirably fulfils the requirements of the State examination in every way, and in addition contains a fund of practical information on gynæcological nursing which is not usually obtained even *in text-books of a more pretentious character.* Comprehensive directions are set forth in regard to the technique the nurse should employ in preparing *for, or assisting at, an operation in hospital and private* practice. We particularly like the useful illustrations with accompanying lists depicted in Chapter XXIII., where those instruments are enumerated which may be required for the various gynæcological operations.

The volume is well printed and illustrated, and should become a standard text-book for the nursing profession.

HEALTH AND PERSONALITY.

By JOHN S. GRIFFITHS, M.R.C.S., L.R.C.P., D.L. *Library of Philosophy and Religion.* London: Hodder and Stoughton. 1925. Pp. 320. 6*s.*

DR. GRIFFITHS has a sense of beauty and a firm hold on ultimate values; much of what he says is of value and some is original. But, as often happens with "popular" works, the lack of system in his *presentation makes it difficult for the reader to keep* his attention on the book. The five chapters form a series of short lectures on unrelated topics. The author dislikes modern psychology and agrees with a recent ex cathedra statement that "dreams have no psychological significance." Even those who are disinclined to accept this or certain other opinions will appreciate the general wholesome tone of the book.

RACIAL CHARACTERISTICS.

Rassenkunde des deutschen Volkes. Sixth edition. By Dr. HANS GÜNTHER. Munich: J. F. Lehmann. 1924. Pp. 504. 10*s.* 3*d.*

THAT *this work has run through six editions in two* years is sufficient proof of its popularity. It is, as its name denotes, a description of the characteristics of those races which constitute the population of Germany. The text has been rewritten and numerous excellent illustrations are added. The author, after a two years' residence in Scandinavia and Eastern Germany, has succeeded in further refining his previous classification of the races of Europe; he has now added a fifth race, the East Baltic, whose chief characteristics are "Short stature, short head, broad face, flat nose, light eyes (slightly Mongolian), and fair hair." Dr. Günther claims, therefore, that he has discovered two fair European races—the Northern or Teutonic (tall, long-headed, and narrow face), and the North Eastern or East Baltic, described above. It may be noted, however, that Deniker (Races of Man), in 1900, described six European races, two of which are fair-headed—the dolichocephalic tall Northern race, and the sub-brachycephalic, short Eastern race. Dr. *Günther's book is especially commendable for its* 450 excellent portraits of types, and being written in simple German will appeal to the reader who has only *a passing knowledge of that language.*

they make individual application for them—nor under what conditions they will cease to be entitled.

The witness criticised severely *the form of record* prescribed by the Ministry of Health, and said that although in his practice they kept a full-time secretary whose job it was to write up the official records, he and his partners never used them, but relied on a system of record cards which were kept in the custody of the patients themselves.

> (Q. 16113.) Everyone of our 10,000 panel patients has one; often he has a bunch of 20 record cards pinned together, which he always brings with him, and in nearly every case carries with him wherever he is. . . . Whenever he comes to the surgery he produces it immediately, almost always without being asked for it. That includes a complete list of every attendance he has had since we knew him, and the opinions which any of us have ever formed as to his ailments, and all the prescriptions which have been given to him from the beginning, together with any opinion of a consultant to whom we have sent him which may have been given to us.

Dr. Roberts said that the principal limitations of *the utility of the present medical service seemed to* him to be:—

> (1) The falling out of benefit of insured persons through unemployment; (2) the limitation of medical benefit to certain members of a family only . . .; (3) the limitation of provided medical treatment to such as is assumed to be within the range of an average general practitioner . . .; (4) the general neglect of insurance committees to make use of their powers to organise public education of the people in the laws and principles of health.

(App. LII.; Q. 16191–16315). Lieut.-Colonel *W. Bickerton Edwards*, who holds office under the Ministry of Pensions but gave evidence as a private individual, gave expression to his views as to the various ways in which the National Health Insurance scheme was defective on its medical side. Amongst other criticisms, he said that as the panel service was underpaid it induced medical men to take on more work than they could efficiently carry through. He *suggested that a visiting list of 50–100 for the day* over a scattered area, and 50–60 patients twice a day in the doctor's consulting rooms worked out in minutes spoke for itself. It was pointed out to the witness that on the basis of careful calculations submitted in evidence by the Ministry of Health his figures would correspond to a list of about 13,000 persons, whereas the maximum number allowed *to any panel doctor was 2500, and 65 per cent.* of all the panel doctors in the country have lists of less than 1200 insured persons.

Amongst the witness's proposals for an improved service, he suggested the division of the country into areas, each with an area hospital with a resident medical officer, nursing staff, and ambulance car, and each general practitioner connected with his hospital by *telephone. He thought that a body of experts* should report on the possibility of the pooling of the existing funds spent on the medical services of the country, and that compensation might be paid for the loss of the wage-earner by death, whether from accident or sickness, the premium at present paid for workmen's compensation being replaced by a sort of health tax. Upon it being pointed out to the witness that the *Holman Gregory Committee* had within the last three years examined this very proposal and reported against it, he said that he had not been aware of that fact.

(App. XXIII. and Q. 10061–10173.) Mr. Benjamin Broadbent, who, in connexion with health administration in Huddersfield has made the care of infant life his special interest, said in evidence that the cash maternity benefit under *the Acts* was a great opportunity unused and that its method of administration was a failure. He criticised the system of payment after the birth and the method of payment by insurance society agents in many cases who canvassed for the insurance of the child's life.

> There is no means whatever for impressing on the mothers the fact that the maternity benefit money is given to her solely in *virtue of her motherhood* in trust for the child, and that it is morally a fraudulent use of the money to spend it on anything that does not help her to be a better mother and to rear her child healthily. It is even open to question whether the maternity benefit has had any appreciable effect in the reduction of infantile mortality, in other words, whether it has improved motherhood.

Mr. Broadbent considered that maternity benefit should be linked up with the maternity and child welfare schemes of local authorities and the money actually distributed by the health visitors, who could couple payment with valuable advice to the mother.

PORT OF LONDON SANITARY AUTHORITY.

THE NEW MOTOR LAUNCH.

By W. M. WILLOUGHBY, M.D., D.P.H. CAMB.,
MEDICAL OFFICER OF HEALTH FOR THE PORT OF LONDON.

THE medical officers of the Port of London Sanitary Authority stationed at Gravesend for the purpose of preventing infectious disease entering the port on ships, as representing the medical officer of health, have somewhat plenary powers. *The Port Sanitary* Authorities (Infectious Diseases) Regulations, 1920, require and permit the medical officer of health to do all that is "reasonably necessary" for the prevention of the spread of infection from ship to shore. "*Infection*" is not defined. *Seldom is any power so* seemingly wide and undefined and touching such large interests conferred on one man. And yet on examination the words "reasonably necessary" imply the very best of limitations—namely, that all the medical officer does shall be "reasonable" and the thing done shall be "necessary."

Such powers and demands could only be given and *made when the knowledge of cause and course of the* ship-borne infectious diseases had reached a point which showed on the one hand that action taken must often be immediate, and on the other that action must be as varied as the agent of infection. These powers are the antithesis of hide-bound quarantine; they contrast cerebration and panic. Any long voyage traveller must have noticed the *effects of the "blighty" sensation on passengers and* crew approaching home and can imagine the result of any delay at the hand of man. Fog in the Channel, well and good, even days of it, but one hour's delay because a fellow man wishes to inquire as to the correctness of a list of addresses and for what purpose heaven knows . . .! The boarding medical officer can hardly explain to all the persons affected the *intricacies of the problem he is solving when holding* up a good-size village at the point of a fountain pen.

Plan to Combat Infection.

International conventions have arranged measures in connexion with cholera, plague, and yellow fever; as more especially ship-borne, typhus fever and small-pox are added to these diseases for the purposes of port sanitation, and as for other infections, there is an old saw to the effect that "if the kitten cannot get in at the same hole as the cat it can stop outside *and mew.*" A cul-de-sac is *therefore arranged for* infection on the following plan.

An officer of H.M. Customs questions the master, or surgeon if one be carried, of every ship from a foreign port as to the health of the crew and passengers. The medical officer hears the answers to the questions "Are you all well on board?"; "Have you had any sickness or death during the voyage?" He examines every case of illness declared, and if it is "reasonably necessary" examines the remainder of the ship's complement. Such reasonable necessity is implied for every ship *which has come from or touched at a port* infected with any of the diseases mentioned above or which may be suspected of them or of rat-plague infection, whether any illness has or has not been declared.

As to the method of examination, the closer the contact of the medical officer with the personnel the more chance he has of covering the whole field comprised in the word infection. Should an officer *not feel for buboes* in examining for plague he *would* not find cloaked venereal buboes or be able to account for every bubo on the ship as it is part of his duty to

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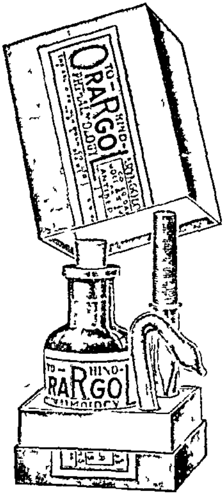
(A.F.D.)



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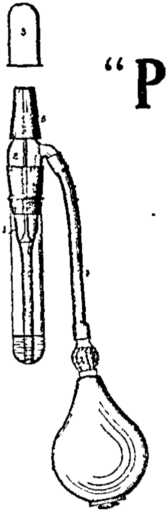

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Postulate 3

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THE LANCET.

LONDON: SATURDAY, JUNE 27, 1925.

REFORM OF THE POOR-LAW: THE APPROACHING OPPORTUNITY.

It is not, we hope, merely fantastic, in the twenty-fifth year of the century, to treat the question of health progress in quarter-century periods. The last quarter of the nineteenth century witnessed that remarkable advance in sanitary science and that tremendous development in environmental hygiene which owed its inspiration to the great reformers of the mid-Victorian era, and which followed upon the recommendations of the Royal Sanitary Commission in 1871. In the succeeding period of 25 years we have seen a quickening of the public conscience in regard to communal suffering and distress which has found its expression in legislative and administrative measures directed to the amelioration of the lot of the individual. Those hard-worked words "overlapping" and "coördination" have been doing good service in recent years and they have a long period of activity in front of them. It is, we suppose, common ground that in the health legislation of the two quarter-century periods to which we have referred there is no clear evidence of proceeding according to plan. Here some new function has been tacked on to the work of an existing authority; there a new authority created and set working on independent lines. Where provision has been made, as in the National Health Insurance Act of 1911, for coöperation with existing bodies, it has been largely a dead letter. And so, on the threshold of another 25-year period, stands Mr. Neville Chamberlain facing a wonderful opportunity. With the impatience of those who will question the need for the elapse of so long a time before a proper development of the plans of public health are laid down definitely and who would like to put things right to-day, we have much sympathy. But to the discerning observer it is clear that over such a region as there is to travel rapidity of movement is impossible. This third period of 25 years, we venture to say, is to see the plans prepared for statesmanlike structure of public health administration, the foundations laid broad and deep, and maybe the building itself erected, equipped, and fully functioning.

In support of the long view in these matters we may reflect that it was so far away as 1871 that the Royal Sanitary Commission recommended that there should be one local authority for all public health purposes in every place, so that no area should be without an authority or have more than one; It was in 1909 that the Poor-law Commission made those recommendations, to which successive Ministers have given their blessing, for the abolition of boards of guardians, whose functions were referred to by the Maclean Committee in 1917 as involving the largest and the most intractable case of overlapping with other authorities. Mr. Neville Chamberlain has recently reaffirmed his intention of tackling the problem of the reform of the Poor-law. He would, we expect, be the first to disavow any suggestion that the health functions of the guardians are being inefficiently performed. It is generally recognised that a large and increasing number of our Poor-law infirmaries are in a position to place at the disposal of the poor and destitute members of the community professional care and equipment beyond the reach of a large majority of the members of the community. But the position is that beds in Poor-law infirmaries to the number of 100,000 are, to a large extent, not used to the best advantage or not used at all, while there is a deplorable shortage of beds in our voluntary hospitals. Sentimental objections to the word Poor-law, and recollections of what that word has formerly conveyed, should not blind us to these things. In clearing the ground for the development of a scheme of public health services under one local authority we have in the Poor-law an administering system, levying enormous public funds for the discharge of its functions, which arise from the existence of disease and distress, yet having no duties or powers in respect of their prevention. To say this is to say how much of the old order must be kept, but how much it needs before it can be kept usefully.

We do not detail any instances of overlapping of public medical services, for they are so well known. The Poor-law question in any case is the most serious proposition, and it may be assumed that, in his proposals for the coördination of various public health services which will be discussed with local authorities, including the boards of guardians themselves—and, we have no doubt, the representatives of the medical profession—Mr. Neville Chamberlain will deal thoroughly and courageously with it. Since the Ministry of Health was created as the first step in the direction of placing all health services under one control, Ministers of Health have come and gone with rapidity. Mr. Chamberlain has before him, as far as one can foretell, a long period of office. He is, we believe, a man of untiring industry, and if he is approaching in a broad spirit the great and intricate problems, he will have accepted a splendid responsibility for developing a new era of public health administration. The problems, as we have said, do not lend themselves to rapidity of solution. Questions of valuation and of reconstruction of areas necessitate consultation with large groups of interests and with many types of experience, and perhaps the overthrow of groups and individuals who will die hard. The opportunity approaches for big work in a big cause.

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THE PURSUIT OF PURE MILK.

Milk is the most important food available to mankind. Every medical practitioner is aware of its value, but his desire to see it more fully utilised is frustrated by his knowledge of the unsatisfactory conditions under which, only too frequently, it is placed upon the market. Few foods have received more consideration, and for few have more strenuous steps been made to obtain a better product. In a series of articles, completed in this issue, Dr. W. G. Savage discusses the problem and why these efforts have not been more successful. One cardinal factor in the position is that the supply of milk is a matter of great importance to the agriculturist, and agricultural interests have often been exerted to frustrate efforts to provide efficient control. The greatest contamination of milk takes place at the cow-sheds which are mostly in rural areas, and the control over production is placed and retained in the hands of bodies composed almost entirely of farmers or persons directly in business relationship with farmers and milk producers. The control over meat is not left in the hands of butchers and meat purveyors. The 1922 Milk Act added extensively to the control over purveyors of milk, but avoided touching milk production. It is well known that the powers of supervision over milk production are very inadequate, but it will come as a surprise to many medical men that it is not illegal for a milker with unwashed hands and dirty clothes to milk manure-plastered cows with dirty udders into an open pail in a dusty hay-laden shed, and for that bacteria-laden milk to be sent long distances without any attempts at cooling. Control is also very ineffective as regards the prevention of acute infectious disease spread by milk or the elimination of the danger of the transmission of bovine tuberculosis from cows suffering from that disease.

An important point stressed by Dr. SAVAGE is the close relationship between the quality of milk supplied and the demands of the consumer. At present the average producer obtains the same price for his milk, clean or dirty; why then should he go to the trouble and expense of providing a cleaner milk which is of no commercial value to him and which by law he is not compelled to provide? This fact suggests that one fundamental condition for obtaining a clean pure milk-supply is to create a demand for it on the part of the consumer. Clean pure milk must be made a business proposition, and Dr. SAVAGE indicates ways in which this can be done. Incidentally he points out that the medical profession is not pulling its full weight in this matter, both by failing to support actively milk producers and distributors who do supply clean milk, and by neglecting to use influence to see that hospitals and other institutions, in their contracts for milk, specify milk of high bacterial purity. An educated public opinion on this subject will make it much easier to ensure that supervision over milk production and distribution will be effective; the present control is farcical. The existing system of certain special grades of milk is admirable from this point of view as an educative influence, since their existence to enable an opinion to be given as to whether such uncontrolled pasteurisation does or does not damage the nutritive qualities of the milk. It is a trade practice to enable initially dirty milk to survive as a commercial product. Such treatment is entirely different from controlled pasteurisation and distinct from the question whether the latter is in itself a valuable and satisfactory solution of the milk problem. In either case it is a substitution of heat treatment for clean production. A point of interest is as to whether conditions are improving. Dr. SAVAGE, from his unrivalled experience, considers that material improvements have taken place in the handling of milk after production, but that up to two or three years ago there was little evidence of betterment in the bacterial contamination at the cowsheds. During the last few years definite progress has been made, especially in regard to the sowing of the seeds of dissatisfaction with existing methods in the minds both of the producers and of the consumers, and in the better goodwill and understanding of the problem shown all round. The Milk and Dairies (Consolidation) Act, 1915, has never been put in force, but is due to come into operation on Sept. 1st next, and the Minister of Health has stated that its operation will not be further postponed.[1] Much of its value will depend upon the regulations made by the Ministry of Health under Section 1 of the Act, and these have to be framed with the concurrence of the Board of Agriculture. The Act has many defects, but, if efficient regulations are allowed to be made, it should improve markedly the legal control over milk production and distribution. For its efficient working it will need the support of all those who care for clean food. The medical profession believes in clean milk, and considers the consumption of it per head to be deplorably low. It will give its support to any reasonable measures to give us a pure clean milk-supply, and to remove what remains at present a serious blot upon the administration of public health in this country.

In all these writings the main plank in the antituberculosis campaign is held to be the immunisation of the people—especially the infant population—with a specific prophylactic vaccine. Opinion naturally differs almost as widely as do the claims of the inventors as to the value of this or that vaccine. Doubtless the proposition is a fascinating one to all sociologists. The future is in the hands of the children, and if the world can be made safe for the coming generation by protection against such diseases as tuberculosis we have advanced one long stage on the road towards a happy future.

Wide publicity has been given during the past week to the announcement, made in another column by our Paris correspondent, that Dr. A. CALMETTE and six colleagues have reported to the Academy of Medicine in Paris the preliminary results of prophylactic vaccination against tuberculosis made in two series of cases of infants under one year of age. The basis of Dr. CALMETTE'S work is to be found in researches made by him, over a long period of years, on a culture medium containing ox gall, by the use of which non-virulent strains of bacilli capable of producing antibodies in laboratory animals have been obtained. The ape and the calf have also been found to resist infection with this strain. There are, of course, not a few of such strains in experimental use in various laboratories of different countries, and some of them, at least, on careful investigation have proved to be avian strains of the tubercle bacillus of very low virulence. (In passing we may note that a very interesting and illuminating article on these strains has recently been written by Dr. A. STANLEY GRIFFITH in the June number of *Tubercle*.) The Calmette vaccine is administered by the mouth in a spoonful of milk every 48 hours from the third to the tenth day after birth. The author states that this method is without danger and "its efficacy is beyond all doubt." Two series of cases have been published. The first is a series of 178 infants treated in 1922. A certain number of these cases appear not to have been traced, but it is stated that 94 are known to be quite well and that no deaths from tuberculosis are known to have occurred. The second series consists of 137 infants treated during 1924. These were all from families in which tuberculosis was known to have occurred. The mortality amongst Paris infants born in such an environment is stated to be 32 per cent. if left untreated, while in the series of 137 cases treated there have been, so far, no deaths. These statistics are remarkable and we await further details with much interest. Do the reports, for instance, state whether or not these last children were left in their tuberculous environment and whether this immunity can be attributed to any other precautions of the antituberculosis campaign, notably removal from the infected homes as is done in France under the famous Grancher system? We ask because a mortality of 32 per cent. among untreated children strikes us as remarkably high, and we do not know on what grounds this figure is suggested.

In conclusion, this experiment in prophylaxis against tuberculosis in infants raises questions which are of fundamental importance to our present views on the wholesale immunisation of a people. In all these large-scale experiments at least two essential desiderata are required. In the first place the bacteriological details of the vaccine must be firmly established, and in view of the doubts cast upon so many of these non-virulent strains of tubercle bacilli we must be quite sure that the strain is a human one. Dr. GRIFFITH'S work has shown that this point is by no means a purely theoretical one. Prophylactic vaccine with avian strains might well fail in its purpose. In the second place the sociological conditions for the experiment must be made non-variable as far as possible. Untreated and treated groups of infants must be under the same hygienic conditions, with the same welfare organisation details. Only by so stabilising the bacteriological and sociological conditions can any such experiments be really crucial. These difficulties have been emphasised at some length as the question of prophylaxis against infective disease is notoriously hard to answer. We have only to follow the discussion which has been going on for some weeks in the *Times* on small-pox prophylaxis to realise how far we are yet from attaining a sociological crucial experiment free from all manner of variable factors.

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PATHOLOGY AT CAMBRIDGE

IN the class lists of the Natural Sciences Tripos issued in Cambridge on June 19th the names of four men and two women appear as having taken Part II in pathology. It is no new thing that pathology should be theoretically, and occasionally in practice, available as a science subject as well as an item in the medical curriculum. But it is a departure full of significance of progress already made, and full of hope for more progress to come, that the subject should reach the position it deserves as a discipline worthy of independent study in one of our ancient universities, where it can be pursued along these lines to such exceptional advantage. The School of Physiology at Cambridge was an infant in the arms of Michael Foster not so many years ago; it has risen to a position which is nowhere surpassed and in few places rivalled, and in its academic devotion to the progress of knowledge has made contributions to practical medicine of the most real and solid kind. We hope that with its new position in the curriculum and its new buildings which are imminent, Prof. H. R. Dean will see the School of Pathology grow and progress to the same distinguished position; medicine is sometimes best served by those who do not go to the bedside.

WIRELESS INJURY TO HEALTH

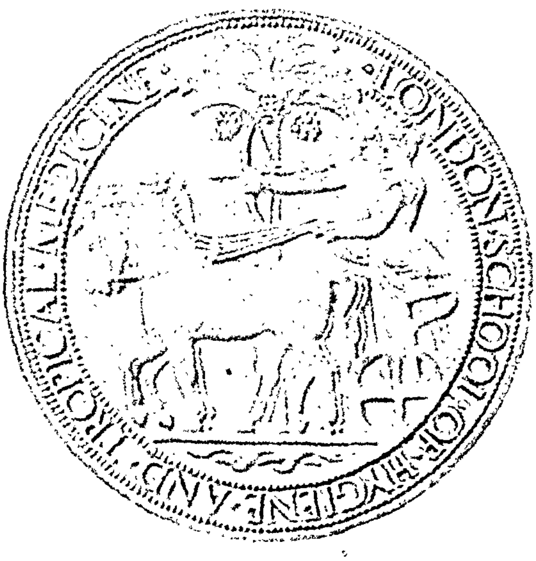
IN the early days of the application of the Hertzian waves a close look-out was naturally kept to see if they had any harmful influence on the operators, and in 1909 Dr. P. Bellile, a French naval surgeon on board a vessel engaged in the Morocco campaign, found that a number of wireless operators developed eczema along with conjunctivitis and even keratitis, presumed to be the result of exposure to electric currents. One man complained of painful palpitation, and Dr. Bellile was disposed to think that neurasthenia, then becoming rather common among naval men, might be due to their work in wireless telegraphy. During the 16 years which have since elapsed, in which every large ship and almost every up-to-date household has installed wireless transmitters or receivers, little or nothing further has been heard of injury to health. A recent tragic occurrence in which a wireless operator was electrocuted in the air was shown to have been due to a leakage of current from the magneto. The report just received from New Jersey of the death of six women in a wireless testing department from nervous collapse followed by fever and unconsciousness will not therefore be debited to the action of long wave currents until exact information is received. Happily it seems that the human body has no apparatus able to respond to very long electric waves.

Annotations.

"Ne quid nimis."

LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE.

THE munificent Rockefeller gift of $2,000,000 does not come to full fruition until the London School of Hygiene and Tropical Medicine is both built and equipped. This will not be for another two years or so, although the decision will shortly be taken regarding the five excellent series of competitive plans submitted to the Advisory Committee. With characteristic generosity the Rockefeller Foundation, however, has guaranteed the sterling value of the gift as from the date when the offer was made. The undertaking of the British Treasury to provide funds



The London School is now proposing to utilise overseas laboratories on a concerted basis rather than to continue the policy of research by expedition, as has been the practice in the past. Within the last few days a proposal has been made to develop the Natural History Museum at Nairobi into a centre for tropical research as a memorial to the late Sir Robert Coryndon, and a Rockefeller gift of £44,000 to the Singapore College of Medicine has been announced for the endowment of chairs of bacteriology and biochemistry. The aims of the London School are typified in its new seal, of which an impression is here given. The design, executed by Mr. Allan Wyon, owes its inspiration to a coin of ancient Sicily, where with little doubt the allusion is to the deliverance of the city of Selinus from a pestilence caused by the stagnation of the waters of the river. Apollo and Artemis are proceeding slowly in their chariot, Artemis driving while her brother, the sun-god, discharges arrows from his bow. The arrows are the healing rays of the sun, which drive away the malaria mists; and Artemis is beside him as the goddess who eases the pains of women labouring with child. The palm tree and the snake have been added to the Sicilian design.

The arrangements here described concern the teaching of tropical medicine for its special diploma, rather than the more general work on public health teaching which will be taken over by the school when completed. The requirements of public health students are being met in London at present at University College, King's College, Middlesex Hospital Medical School, and the Royal Institute of Public Health, with a special course on sanitary law and administration at St. Bartholomew's Hospital Medical School. It is proposed to develop the teaching of applied physics, physiology, and principles of hygiene, for which at present facilities simply do not exist, and public health students will also attend a course in parasitology to be given at 23, Endsleigh-gardens by Colonel A. Alcock, Prof. R. T. Leiper, and Dr. J. G. Thomson. At the same time opportunity will be taken of collecting a graphic museum of public health, something on the lines of the Ministry of Health exhibit now showing at Wembley, which will not be allowed to be disbanded when the Exhibition closes.

connects the sexes with the sides of the body should have some sort of foundation. But that is quite a different thing from accepting such views as true. There is, so far as we know, no proof at all of the existence of the biological condition which seems to be assumed by both these writers. The different functions of the two sets of organs, on the other hand, constitute a conception which does not seem to fit in with such facts as the mixed nature of the sexes in the two uterine tubes in animals with large litters, or the presence only of one-sided organs normally in certain orders of animals. This last, by the way, may be associated in some way with the reversed idiochromosome arrangement to which Mrs. Erskine also refers in her letter. Chromosome observations, tentative as they now are, must be taken into account as future factors in deciding these questions. Their inherent difficulty has delayed progress, but if they materialise as they promise to do, they will form a body of positive facts that cannot be denied. Nevertheless, we must not lose sight of older experimental work, which showed that environment has some influence on sex-production in invertebrates and amphibians, and possibly a parallel may be admitted in the changing of sex after birth, which is known to occur even as high in the zoological scale as the birds. It may be objected quite properly that the human subject may have specialised in this matter on different lines, but it is clear that the chromosome factor and the environment influence do not necessarily stand as opposed hypotheses. At present it is enough to say that *if* and *when* the chromosome factor is established it will apparently be one with which all other views must be congruent. The clinical observations of Dr. Dawson and Mrs. Erskine may turn out to be approximately correct so far as conclusions drawn from them are concerned, and in the absence of crucial experiments they command attention; but they must give way to such evidence when it is forthcoming. We do not wish to lay any stress on the various anatomical and physiological crudities occurring in the book—these are only to be expected and do not affect the issue—but it must be pointed out that the one essential point is the demonstration of qualitative difference between the ovaries, and this is at present totally lacking.

SUNLIGHT AND CANCER.

EXPERIENCE has taught us that almost all our therapeutic agents are double-edged weapons and must be used with care and moderation if the evil that they do is not to live after them. The virtues of the solar rays in the prevention and cure of disease have been so loudly acclaimed of late that their rôle in its causation has received hardly any notice. In this country the question is not acute and in those regions where the sun has great power Nature has endowed the natives with protective dermal pigment, and the dangers of acute sunstroke are so vivid that the northern visitor takes elaborate precautions against exposure. It is only in the middle zone, where the rapid acute effects do not occur and the blonde, with his inadequate protection of freckles, works day by day in the sunlight, that we can expect to see the chronic lesions brought about by solar rays. Prof. W. Dubreuilh, of Bordeaux, in delivering the annual oration before the London Dermatological Society on June 17th, adduced much evidence to prove that the cumulative effect of prolonged exposure to the violet and ultra-violet rays in sunlight is responsible for those changes in the skin which are commonly, but erroneously, ascribed to senility. The only true senile change is loss of elasticity; the macular discoloration, the patches of small distended vessels, the white achromic macules, and the crusty or scaly areas are all pathological and constitute an ensemble described by Prof. Debreuilh in 1908 as "keratosis senilis." This term he would now make interchangeable with "keratosis solaris." The condition occurs only on parts exposed to the sun, and its connexion with exposure is well seen in the elderly peasant women who have worked in the fields all their lives, their heads protected by the conventional folded kerchief. Beneath the kerchief there is no "senile" change save wrinkling; the uncovered part of the forehead and ears, the face and the hands show all the characters of keratosis senilis. The condition is to be grouped with leuco-keratosis of the tongue, arsenical keratosis and Paget's disease of the nipple. It passes imperceptibly into that described by Prof. Debreuilh in 1896 as "precancerous keratosis," and epitheliomatous cells can be recognised histologically long before there is clinical evidence of epithelioma. The malignancy is no accidental supervention, but the final and inevitable stage of the process, if it be continued over a long period, even if the stimulus has ceased to be active some time previously. The distribution of epitheliomata supports the theory of solar origin. The terminal phalanges are very rarely affected, since these are wrapped round the hoe or other implement and so are not exposed. A striking contrast is seen in the X ray cancer, where these parts are as commonly affected as the rest of the hand. The dermoid is apt to occur at the inner canthus of the eye, the epithelioma scarcely ever, since that area is the part of the face most protected from direct sunlight. The preponderance of these epitheliomata of face and hands that come from country districts has been noticed by Bellini in Milan and by McCoy in America, as well as by Prof. Debreuilh in Southern France. McCoy has even noted that the condition is more common where there is a chalky soil, which reflects and enhances the effect of the direct ray, perhaps also increasing the relative proportion of the shorter rays. Southerners are rarely affected, Arabs and such dark-skinned races never, and the incidence falls far more heavily on the blonde than on the brunette. German observers have described a carcinoma of seamen, a phenomenon occupying a position intermediate between keratosis solaris and xeroderma pigmentosa. Here again the reflection of the rays from the surface of the sea is to be regarded as the reason for its limitation to seafarers. Prof. Debreuilh's observations of the rare xeroderma pigmentosa have led him to regard it as an acute form of keratosis solaris occurring in early childhood, as soon as exposure begins, owing to a peculiar sensitiveness of the individual skin. The length of the radiant wave seems to affect the nature of the lesion. The calorific rays produce instantaneous effects, with very rapid necrosis and much pain. Examples of their more chronic effects are the condition met with on the shins of those who sit much over fires during the winter, the epitheliomata of the shins of stokers, and the Kangri cancer, but these are late and rare developments. The X rays produce a slowly developing and slowly fading erythema. Numerous short exposures result in a cumulative effect similar to that of sunburn. The lesions of the violet and ultra-violet rays have a latent period of many hours and never show much necrosis. The grave results are only seen after years have passed. The latent period for the Rontgen rays is much longer—10 or 15 days—and the pain is less; the chronic effects appear sooner and are more serious.

COHNHEIM'S EXPERIMENT ON INFLAMMATION.

Two different views are held concerning the origin of the cells seen in the early stages of inflammation in the inflammatory exudate. Cohnheim taught that they are exclusively leucocytes which had emigrated from the blood-stream, a view which has been accepted, though not in its entirety, by the majority of pathologists. On the other hand, there are such distinguished authorities as Virchow, Stricker, and Grawitz who maintain that these cells are derived almost exclusively by proliferation from the connective-tissue elements and that emigration from the blood-vessels plays only an inconspicuous part. The problem has been the centre of a prolonged and extensive controversy during more than 50 years.

U. Westphal[1] has recently repeated Cohnheim's original inflammation experiment in order to obtain fresh evidence. By direct microscopic observation of the frog's mesentery he could follow all the stages of diapedesis of leucocytes from the blood-stream through the walls of the capillaries. This could be rendered particularly clear by a preliminary injection of neutral red. The leucocytes engulfed the red granules of the dye, and being thus coloured their paths could be followed readily. In another series of experiments the mesenteries were fixed after varying periods and the oxydase reaction applied to the various pieces. It is claimed that this reaction, in which indophenol-blue is formed owing to the presence of an oxydase in the cells, is almost specific for the polymorphonuclear and the eosinophile leucocytes, and is not given either by lymphocytes or the cells normally present in connective tissue. It was found that the normal mesentery shows only a few isolated cells in the capillaries giving this reaction, while the inflamed mesentery shows an accumulation of these leucocytes, stained a deep blue, at first within the capillaries and later as the inflammation proceeds in the connective tissue outside the blood-vessels. Westphal concludes therefore that in the early stages of inflammation—i.e., the first 24 hours—there is a massive emigration from the blood-stream of the polymorphonuclear leucocytes into the connective tissue and that these represent the bulk of the cells of the inflammatory exudate during that period. A very interesting result was obtained when a leucopenia had been produced by the injection of benzene. Blood films showed that though the leucocytes were greatly diminished they were not completely absent. But no leucocytes at all were seen in the inflammed mesentery of such animals even after 24 hours. This result indicates that diapedesis is not merely based on mechanical factors, such as pressure, but is a manifestation of the activity of the living leucocytes responding to stimuli such as chemotaxis. When the vital activities of the leucocytes are impaired, as they were in this experiment by the toxic action of benzol, this phenomenon of diapedesis fails to appear. The technique of the experiments is described in detail and the results are illustrated by instructive microphotographs. It would seem very suitable as a class experiment in a course of experimental pathology.

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obtained out of a Pullman car but unusual in a ship. There are half-a-dozen forced draught supplies from a trunk each side, and two 6-inch shafts amidships as exhausts. Below this is the grill-room for 40 guests (a silver grill in the galley—i.e., kitchen), with a fresh-air supply down the centre of each table and an exhaust forward. Aft on the upper deck is the main saloon, with heavy carpets and good upholstery, vacuum cleaned every morning; aft of this is the ladies' room, quite comfortable, with lavatory basins. and four well-ventilated, well-lighted, roomy w.c.'s. Off the midship end of this saloon there are, on the port side, a stair to the smoking-room and bar, and starboard, another stair to the tea-room, comfortably fitted and well ventilated. Amidships are the w.c.'s, urinals, and lavatories for passengers, white painted and well lighted throughout; quite satisfactory. The bars, kitchen, and pantries are all well lighted and well ventilated. It is pleasant to see so much consideration given to the comfort of the staff. A word must be said of the ventilation discharge outlets; they are round like oranges, and set in a spherical bearing, within which they move quite easily. Consequently, the air discharge, through what one might consider the polar circle of the orange, can be readily directed to the floor or the ceiling, or directly on to oneself if desired. With this outlet no ventilating current can be so easily prevented from becoming a nuisance. As the ship carries some 45 tons of drinking water, taken in from London daily, it has been possible to install a soda fountain. and all refreshments, solid and liquid, are kept well cooled, there being a large refrigerator on board by Halls, of Dartford. It may be mentioned that, above the promenade deck, is a large cylinder, a fire extinguisher, half containing acid, half an alkaline solution. In case of a fire these would be discharged upon it together, when it is expected that that fire would be at once smothered by the carbonic acid. Life-belts are carried under each saloon seat. The crew's fo'c'sle is aft of the collision bulkhead forward, and has 12 beds, with spring bottoms and mattresses, away from the ship's side; a rough eye measurement suggests there are 150 cubic feet for each man, and there are sprays, lavatories, and w.c.'s for sailors and stewards, just as good as for passengers. This is as it should be. The summer trips of this ship should be cool and pleasant.

inhabitants of Polynesia came. It seems to us, however, that the migration theory will not explain the universal folk-lore belief in Europe that the land of the dead lies to the west. The euphemism "go west" for "die" has passed into a proverb, among the Celto-Iberian peoples the land of the dead lies to the west, the Vikings laid their dead in a ship on a pyre which was fired and then the ship sent out to sea, the Fortunate Isles and the Isle of St. Brandan were all in the west and so were the Hesperides; the westernmost point of Brittany is full of traditions of a race whose profession was rowing the souls of the dead across the sea. According to Procopius, the land of the dead was Brittia—i.e., England, which, together with Ireland, was the westernmost portion of Europe. Finally, we have the traditional land of Atlantis. Now the migration theory does not explain these beliefs, unless the inhabitants of Europe originally came from Atlantis, and it seems to us more likely that the idea of the land of the dead being situated in the west arose from the sight of the daily apparent course of the sun.

Miss Moss tells us in her preface that the purpose of her present inquiry is to trace the connexion between burial customs and beliefs in a future life among the more primitive peoples of Polynesia, Melanesia, and Indonesia. She has collected an enormous amount of information as to burial beliefs in Polynesia and the journey of the soul after death, and everywhere we find the same ideas as are current in Europe. The ordeals and tests which the soul has to pass are much the same as those described in that curious folk ballad, "A Lyke-Wake Dirge," which mentions the bridge which must be crossed. Again, the dead do not depart at once for the spirit-world but linger for some days round the body. This belief is not extinct even now in Europe; not many years ago a medical man told us that a patient of his had left a request that his body should be cremated. The mother of the dead man absolutely refused her consent. When asked why, she said that if the body was burned the soul of the dead would at once depart and not linger round the grave. The persons concerned were of high intellectual capacity. Miss Moss's book is well worth reading, her material is well put together, and she does not dogmatise; but all the beliefs which she has collected go to show that humanity has preserved a deep-lying stratum of creed which must have come down from the long ago when the human race was one people.

INTERNATIONAL CONGRESS OF RADIOLOGY.

THE International Congress of Radiology which, as we have already announced, will be held in London from July 1st to 4th, may certainly be regarded as an important node in this rapidly growing branch of medicine, for in its size and scope it will be greater than any such assembly hitherto held. The Congress is the direct outcome of one of the first proposals made by the British Institute of Radiology on its foundation some two years ago, and the number of foreign countries represented on the conference programme forms a very striking proof of the high value that is set on the international discussion of the many problems with which radiology is now faced. In this connexion we might draw attention to the letter on p. 1370 of this issue, setting forth a scheme proposed in Vienna for an international association of teachers of medical radiology. The United States of America, France, Germany, Austria, Belgium, Norway, Sweden, Denmark, Italy, Czecho-Slovakia, Switzerland, and Russia are among the countries represented at the Congress, and well represented. The meetings will be held in the Central Hall, Westminster, where an exhibition of apparatus will also be on view. The Congress will be officially opened on July 1st at 2.30 P.M. by the Duke of Connaught, accompanied by the Minister of Health (Mr. Neville Chamberlain). On the previous evening, June 30th, a preliminary reception will be held by the President of the Congress, Mr. Thurstan Holland, at the house of the Royal Society of Medicine, 1, Wimpole-street, W. The official Congress dinner will take place on the evening of Thursday, July 2nd, in the Great Central Hotel. The work of the Congress will be divided into three sections: Physics, electrotherapy and actinotherapy, and radiology respectively. On the morning of Wednesday, July 1st, Sir William Bragg and Dr. Béclère, of Paris, will open an important joint discussion between the sections of physics and of radiology on international units and standards for X ray work. In the evening the Sylvanus Thompson Memorial Lecture will be given by the Duc de Broglie on Absorption of X and Y Radiations and the Secondary Radiations which Accompany Them. On Thursday morning, July 2nd, various papers will be read in all three sections. Discussions on electrotherapy and actinotherapy will be opened by Dr. E. P. Cumberbatch and Sir Henry Gauvain respectively. In the afternoon the physics section will visit the National Physical Laboratory at Teddington. On Friday, July 3rd, discussions in the sections of physics and actinotherapy will be continued, while in the radiology section papers will be read on the thoracic organs and X ray therapy. In the evening the Mackenzie Davidson Memorial Lecture on the relationship of radiology and surgery will be delivered by Sir Berkeley Moynihan. On Saturday morning, July 4th, papers will be read on the diagnosis of diseases of the nervous system and on X ray therapy, and at 12.15 P.M. a meeting of the international delegates will be held to consider the formation of an international committee. The office-bearers of the Congress are as follows:—President: Mr. Thurstan Holland. Vice-Presidents: Dr. A. E. Barclay (President of the Rontgen Society), Dr. Stanley Melville (President of the Electrotherapeutics Section of the Royal Society of Medicine), and Sir Humphry Rolleston (President of the British Institute of Radiology). General Secretary: Dr. Stanley Melville. The joint executive secretaries are Drs. J. E. A. Lyndham and J. Muir, from whom copies of the programme and other information may be obtained at 32, Welbeck-street, London, W. 1.

ACTION OF WATER ON COPPER SERVICE PIPES.

A FEW months ago we directed attention to a pamphlet which was being widely distributed by the Copper and Brass Extended Uses Council advocating the use of copper for service pipes for water distribution, and we then remarked that little was known about the action of various types of water upon copper, and that before the general use of this metal could be advocated the subject seemed to require investigation. A second edition of the pamphlet has now been issued quoting freely results obtained by Dr. J. C. Thresh with various waters, which were the subject of a special article in THE LANCET of March 28th last. It was shown in this article that practically all waters—acid, neutral, or alkaline—act upon copper, the reaction taking place between the oxygen in solution and the metal, a hydrated cupric oxide probably being formed which is very slightly soluble in acid-free water. If a trace of copper as sulphate is added to pure distilled water and the solution is then rendered alkaline by the addition of a trace of potassium hydrate the liquid remains clear and bright and the copper therein can be easily estimated. If the liquid, however, is filtered through paper most of the copper is removed, and if filtered through asbestos or a Pasteur filter, the whole of the copper disappears. Hence the hydrate formed probably exists in a colloidal condition. If the alkaline hydrate solution is acidified with carbonic acid, filtration produces the same effect as with the alkaline water, but if acidified with the merest trace of acetic or other acid, filtration removes none of the copper. These facts explain the action of natural waters. If the water contains no free acid save carbonic the amount of copper taken up is exceedingly

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CXXVIII.

THE TREATMENT OF WARTS AND MOLES

Warts.

THE common wart is of infective origin and auto-inoculable, and is most frequently seen on the dorsal aspects of the fingers, about the knuckles, and round the nail-folds. These villous papillomata are easily contaminated with dirt and therefore usually of a brown or blackish colour. In association with the "mulberry" tumours there are sometimes found a flat variety (*verrucæ planæ juveniles*) on the face, particularly of children, thus suggesting their contagious nature.

Local treatment in cases of multiple warts of children may be preceded by oral administration for a week or two of magnesium sulphate (dose according to age), or lime water, half a pint daily (Sequeira). Glacial acetic acid is the best local caustic and should be applied twice daily, the surrounding skin being protected with vaseline. Care must be taken when it is used on the face; a 5 per cent. solution of resorcin and salicylic acid in spirit is a better application in this situation. Ultra-violet rays from the Kromayer lamp in skilled hands will also effect a cure of this superficial type by causing a general exfoliation of the parts irradiated.

The thickened chronic warty growth on the knuckle may have to be attacked with the actual cautery. This is not necessarily a painful procedure, and in adults no anæsthetic is required. The cautery point should have a cutting edge which is allowed to sink vertically in parallel lines at a dull red heat into the excrescence until the patient complains of pain. This method is especially useful in cases in which the fold of the nail is involved.

Plantar warts, owing to their situation and configuration (apex of a pyramid directed upwards), are worthy of special notice as they cause great pain on walking. There may be a group of two or three such conical tumours on the heel or ball of the great toe. Pain is almost invariably relieved and walking rendered possible by surrounding the warts with a ring of felt, to take the weight of the body. The best curative agent is radium, an unshielded applicator of full strength being applied for an hour to an hour and a half.[1] The wart is usually extruded in about three weeks, within which time a further application should not be made. X rays (2 β dose), through a half millimetre aluminium shield, may be substituted for radium and given at intervals of ten days.

The *filiform* wart, most commonly seen on the mucous membrane of the external genitals, or on the lips, or on the skin of the eyelids, has probably the same ætiology as the flat wart. Its minute size and the delicate character of surrounding structures contra-indicates the use of caustics. Careful removal with the cautery is the simplest and safest procedure.

Venereal warts are usually massive cauliflower-like excrescences about the external genitals of persons with gonorrhœa or other specific infection in which discharges occur. They are easily contaminated with the organisms of secondary sepsis and soon become an exceedingly offensive complication. The anal mucous membrane may also be involved. Frequent washing with lotio nigra, and the liberal application of a 5 per cent. calomel dusting powder should precede more radical measures, and are sometimes successful in causing involution. Surgical ablation with the sharp spoon under anæsthesia is the usual procedure in these cases, but a more modern method which precludes the possibility of hæmorrhage is the diathermy current. The excrescences are well soaked in saline, a flat applicator electrode is held against them, and the current turned on slowly until they coagulate, whiten, and begin to steam, owing to the heating up to boiling-point of the contained fluids. Charring by spark discharge (fulguration) should be avoided. Frequent dusting with an antiseptic powder is the only subsequent treatment required. To prevent recurrences after removal it is, of course, essential to treat the associated specific infections. A few doses of X rays (½–¾ β) through a ½ mm. shield may be tried at weekly intervals when surgical procedures under anæsthesia are refused or inadvisable, and chemical caustics, such as pure phenol or acid nitrate of mercury, may also be used. In this case great caution must be used in protecting surrounding parts.

Seborrhœic warts occur in association with the seborrhœic diathesis on the scalp and cause annoyance by the constant trauma of the brush and comb. Here again the actual cautery is the best and cleanest ablation method; recurrences may be prevented by prescribing an antiseptic hair lotion. Another type of seborrhœic wart occurs on the back, flanks, and abdomen of predisposed persons of both sexes after middle-age. They are black or yellowish-brown in colour, associated with a greasy skin, and do not undergo malignant change. Sometimes pruritus is complained of and removal requested. Mild exfoliative doses of the Kromayer lamp (ten minutes at three feet) at weekly intervals, or the X rays (¾ β unshielded) once or twice at an interval of 14 days, usually effect a cure, which has to be maintained by the daily use of a sulphur or sulphur-naphthol soap; this is sometimes effective without other treatment. More chronic isolated lesions can be removed by soap plaster or salicylic plaster (5 per cent.) applications, and if these fail recourse may be had to freezing (¼–½ minute) with the carbon-dioxide snow pencil.

Warts which Tend to Ulcerate.

Senile warts, arsenical warts, warts from the constant exposure to sunlight, X rays, tar exhalations, paraffin and soot, have to be sharply differentiated from the foregoing types, as they not infrequently tend to ulcerate and to be transformed into epitheliomata. Senile keratosis or warty patches on the face or backs of the hands in persons over 60 are not uncommon in fair subjects, especially if they have lived in tropical climates. Usually the condition is associated with small areas of cutaneous atrophy and brown or yellowish pigment spots. In the other types which resemble the senile variety clinically, a history of causation is usually forthcoming. In such conditions removal of the warts should always be advised and may be effected with CO_2 snow, diathermy, or surgical excision. It should be remembered that ineffective radiotherapy may actually stimulate these growths, and for this reason X rays and radium should be employed by an expert only, or in cases which can be kept under observation for a long time.

Moles.

All moles are of congenital origin, although not always apparent at birth. They are arbitrarily classified as pigmented, non-pigmented, and hairy. In size they vary from a pin's head to a large area involving half the face or one buttock or even more. The treatment which is always sought for at some period or other of the patient's life, either on account of the disfigurement or for fear of subsequent malignant changes, must be guided by the size and situation of the anomaly. Once decided upon, radical procedures should not be postponed as moles grow with the child.

Small non-pigmented moles can be easily removed by freezing for periods varying from 40–60 seconds, according to their apparent depth in the subcutis. The ensuing blister should be pricked aseptically and then dressed with calamine lotion. The scab should

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[1] Vide Clinical Index of Radium Therapy (A. E. Hayward Pinch), pp. 40, 121.

milk at the lowest possible cost and sell it at the highest possible price It costs more to produce clean milk, but unless he produces a specially clean article which he can label as a graded milk and sell at a higher price he obtains no more for clean than for dirty milk For the ordinary producer the scales are weighted in favour of dirty milk The solution is to make the balance tip the other way Simple education of the milk trade without a concrete business objective has been tried for 20 years and more and has done very little

Such a solution may be sought along several lines One is to make the consumer realise the kind of milk he should receive and insistently demand it The distributor will then have a direct incentive to supply clean milk and will take steps to obtain and supply it Up to the present I have failed to find a distributor who will give a better price for clean than for contaminated milk In the absence of an insistent demand there is no inducement for him to do so

In this connexion it must be admitted that the medical profession does not fully utilise its opportunities Individual members often fail to impress upon their patients the necessity of obtaining their milk from satisfactory sources, and producers of graded milks have complained to me that they have not obtained the support of medical men in their districts in their endeavour to provide a pure supply As members of hospital staffs they are usually in a position to stress the need for the hospital milk supply being of high bacterial quality, but it seems to be the exception for this to be done Within the last few months through the courtesy of the hospital secretaries, I have obtained particulars of the terms of the contracts for milk for six large voluntary hospitals Four of them impose no conditions as regards bacterial purity, one requires the milk to be Grade A, one makes no bacterial stipulation but submits samples periodically to the hospital pathologist for bacteriological examination Insistence upon reasonable standards of bacterial purity would not only benefit the hospital but serve as a valuable educative influence upon the production of a cleaner milk supply A second line is to make the producer and distributor realise that the consumption of fresh milk is influenced by the quality of the article supplied and that an increase in the supply of fresh milk and a diminution of the use of preserved milks can be materially stimulated by the supply of a better quality article A third line is to penalise really bad milk and make it unsaleable This must operate by eliminating the hopelessly bad producer, and by stimulating the mediocre producer to better his methods In my opinion it is essential that this third line of action should be made to operate, but the method of doing it requires careful consideration

Unless specially trained and efficient inspectors are available it is dangerous to make this power dependent solely upon the results of inspections of the conditions of milk production After all the essential point is whether or not reasonably clean milk is being obtained, and this can best be judged by the direct bacteriological examination of the milk The existing grades should be augmented by a degraded milk—Grade C, milk below any reasonable standard of purity The production of such a milk would be suspected by inspection, proved by bacteriological examination If after several warnings conditions were not considerably improved, the milk supply from that producer would be labelled *Grade C* It should be illegal for any wholesaler to mix it with other milk and it could only be sold as Grade C and also marked inferior quality milk, which should be boiled before use Milk could only be removed from that grade after definite alteration of quality, as shown by an improvement of methods and production and a series of bacteriological examinations paid for by the producer The conditions for Grade C would be laid down by the Ministry of Health, and could be so drawn as to include at the outset only thoroughly bad milk, to be tightened as average conditions improved

The beneficial effect of such a logical addition to the grades would extend far beyond the actually small number of producers so penalised since the knowledge of its existence would have a highly salutary educative influence It would in practice only penalise the small number of incorrigible producers whose methods and practices are a disgrace The average producer should welcome it, since it would remove the unfair competition of milk of this type

Bacteriological examinations of milk are extremely valuable in connexion with efforts to produce a pure supply [1] Their greatest utility is as a sorting agency, and to see that graded milks maintain their stated standards rather than as a means of fixing bacteriological standards failure to comply with which is a punishable offence, a procedure in favour in some American cities

The Bogy of Increased Cost of a Better Milk Supply

The opponents of a better milk supply always advance the argument that a pure supply means increased cost and whatever we do we must not increase the cost of milk The argument is not very convincing and might be applied to every foodstuff We have witnessed from the action of economic causes, an enormous increase in the retail price of milk, but there is little evidence that it has materially affected the consumption of milk A cleaner milk will ensure a larger consumption of milk, yielding a bigger profit and so possibilities of reduction on the retail price Milk is no exception to the ordinary business postulate that a good article pays its way Purely as an *agricultural* problem it is arguable that when the routine had been acquired a clean milk would pay itself from the saving of pasteurisation prevention of losses on soured milk, and increased health of cattle from a diminution of bovine tuberculosis There is no real reason why the provision of clean milk should send up the cost of production appreciably and more than temporarily Many thousands of milk producers do supply good milk at ordinary prices and make it pay [2] The committee on the production and distribution of milk pointed out that there are numerous ways (eight are given) many now neglected by which the costs of milk production can be reduced If it is so important to keep down the cost of milk why allow these to be neglected and fasten attention on the one factor which is of public health importance ? To take but one of them, there are many thousands of farmers who never keep milk records and who, in consequence, are milking cows which are absolutely uneconomic This one reform alone would pay all the additional costs of the difference between producing clean milk and the present average quality milk This cost bogy argument should leave the medical profession cold

While the cost of production and of distribution need not be materially increased for average clean milk a distinction must be made as regards the cost of supervision Undoubtedly the cost of supervision must be considerable especially if part of a system to eradicate tuberculosis This should not fall upon the milk trade, and therefore would not affect the retail price of milk It is part of the general public health expenses of the country The greater part of the milk of the nation is produced in the rural areas while most of it is consumed in the urban districts There is, therefore, considerable justification for the plea that material contributions towards the cost of supervision should be made by the urban areas Under our present system of government such financial assistance can best be given by grants in aid from the Ministry of Health to pay part of the costs of supervision This would also have the effect of making for efficiency and for uniformity of administration since neglectful authorities would lose their grant

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[1] See article by the writer World's Dairy Congress 1923 Proceedings vol ii p 1295

[2] My home supply is a milk bottled at the farm and which consistently contains far fewer bacteria than the legal limits of Grade A and it is delivered to me at the price of ordinary milk

Another favourite argument advanced, that proper milk control means new hordes of officials, is singularly inappropriate when applied to milk. Control over the satisfactory production and handling of milk is best judged by bacteriological methods. Such methods can pick out with tolerable certainty and uniformity the milk producers and others whose methods of handling milk are below a reasonable standard. One bacteriologist can examine a very large number of samples per day, and with his help the number of field inspections required is immensely reduced. Attention can be concentrated upon the worst and a steady levelling up process inaugurated

Summary of Remedies Proposed.

With a subject of such magnitude as the milk problem, and one which has been the object of so much detailed study, it is impossible to cover every phase in the limits of space available. What has been attempted has been a rapid survey of the present position and an outline of those remedies which seem to me to be of most utility. As regards these remedies the most essential may be summarised as follows:—

1. A continuance of the present system of grading, for its educative influence, but with the addition of a *Grade C* milk designed to repress the very dirty minority of producers.

2. Systematic efforts to educate the consumers to appreciate the importance of good quality milk and the value of milk as a food. Education of the milk trade as to the need for improvement in methods and the financial advantages involved. In connexion with such educative activities the medical profession could play a powerful and influential part if they were agreed as to the lines to follow.

3. Additional legislation: (*a*) To enable effective powers to be obtained to deal with bovine tuberculosis. (*b*) To define the minimal requirements of clean pure milk and provide for their compliance. (*c*) To give extended control to prevent the infection of milk with pathogenic bacilli. (*d*) To simplify the control over milk by its entire transference to the larger local authorities. (*e*) To provide for the payment of grants in aid from the Treasury through the Ministry of Health towards the cost of the supervision over milk production and distribution.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

were only 7363 divorces, and in 1913 this figure had jumped to 15,372. Divorces, it would seem, are largely a matter of fashion and are probably much more subject to such influences as suggestion than are births and deaths. A comparison of the numbers of divorces in the different areas indicates that industrialism gives rise to conditions favouring divorce, the highest divorce figures being found in the industrial Departments, and it is instructive that, while in one industrial area there were as many as 241 divorces per 100,000 inhabitants (Department of the Seine) there were only 23 divorces per 100,000 inhabitants in another area (Côtes-du-Nord). With regard to the narrow margin between the births and deaths in France, the modern tendency is to widen this margin rather by measures calculated to improve the general health and add to the longevity of the living than to swell the numbers of the new-comers.

Copyright of Medical and Pharmaceutical Lectures.

The eleventh Chambre Correctionnelle has recently been the scene of an interesting lawsuit concerned with the copyright of the spoken word. A publisher, Mr. Lambert, had made use of shorthand notes of lectures given by professors of the faculties of medicine and pharmacy, circulating these lectures weekly to his subscribers. In the course of the judgment passed by the Chambre, which imposed a fine of 50 francs on the publisher, it was stated that "the laws concerning copyright apply to the spoken word, particularly to the lectures of professors." Each of the professors whose lectures had thus been published without their previous consent was awarded 100 francs in damages. No one in court recalled the precedent of a hundred years ago when Sir Astley Cooper and John Abernethy bitterly resented the publication of their lectures in THE LANCET. It is not yet clear what effect the decision of the French court will have on the reporting of lectures and proceedings of medical societies, but the guess may be ventured that there will be little change. Indeed, as most professors are human, or nearly so, it is probable that if their spoken words were to be held strictly sacrosanct and respectfully ignored, more pain would be inflicted than if a verbatim report were to be given all the publicity at the command of the most pushing of impresarios. A verbatim report is, by the way, to the carefully edited report what the amateur photograph is to the touched-up product of the professional photographer, and it is sometimes an act of refined cruelty to broadcast every word of a volubly inaccurate speaker. Provided public speeches are edited as well as reported fairly (in fairness to the speaker rather than to the audience), there is seldom much likelihood of questions being raised either in France or in England as to the copyright of the spoken word.

Presence of Tubercle Bacilli in the Pharynx of Infants with a Positive Skin Reaction.

The tuberculin skin test is of absolute and indisputable value in the difficult matter of diagnosing tubercle in infants, but it is also of importance to know whether the infant, like the tuberculous adult, is liable to spread contagion. The infant, of course, does not sin by spitting, and the search for the tubercle bacillus in the pharyngeal mucus, taken directly or by means of lavage from the stomach, has given very inconstant results. The very small number of bacilli which may be present are found with great difficulty. Drs. Lesné and Langle conceived the idea of injecting this pharyngeal mucus subcutaneously into a guinea-pig. The results of their experiments showed that two-thirds of the infants with a positive skin reaction, who were infected with tubercle in either a latent or an active stage, carried virulent tubercle bacilli in the pharynx. On the other hand, injections made from infants with a negative reaction produced no effect on the guinea-pigs. The bacilli are probably derived in most cases from pulmonary lesions opening into the bronchi. Yet if no pulmonary lesions were discoverable on radiographic examination, which is not uncommon, or if the infant has succumbed without a caseous focus being located, it may be permissible to suppose that the pharynx was not the portal of exit of the bacilli but the portal of entry. The organism might be present in the pharynx and, without apparent lesion of the mucous membrane, might infect the subject. However that may be, we should not regard infants with a positive skin reaction as non-contagious, although they do not spit. They may infect healthy children with whom they are placed in contact, either directly or indirectly by the medium of such articles as indiarubber teats, spoons, and towels. Therefore, before allowing infants with a positive reaction to associate with non-tuberculous children, the pharyngeal mucus ought to be tested by inoculating a guinea-pig, and, if it is thus proved infective, all necessary precautions should be taken.

The Vaccine B.C.G.

Before the Academy of Medicine Dr. Calmette recently gave the clinical and experimental results of preventive vaccination against tuberculosis in new-born children by means of the vaccine Bilié-Calmette-Guérin, known as B.C.G. Many doctors make use of this vaccine, especially in cases where the children have been born in a home in which tuberculosis is already rife. The results have been very satisfactory. Not one of the 178 infants vaccinated three years ago has died of any infection which might be called tuberculous; 91 of them which were recently examined are in perfect health and their growth has been normal. From July 1st, 1924, to June 1st, 1925, 2070 new-born infants were vaccinated by the B.C.G. supplied by the Pasteur Institute without any untoward results. The method of vaccination consists in administering three doses of the vaccine in a teaspoonful of milk at intervals of 48 hours when the baby is from 3 to 10 days old; 137 of these children vaccinated in this way in families where the exposure to tuberculous infection was great have not furnished a single case of death from tuberculosis, while on the other hand the mortality of unvaccinated children under the same conditions stands at 32·8 per cent. in Paris during the first year of life, and at 24 per cent., on the average, for the whole of France. The experiments show that the vaccine B.C.G. confers on monkeys and young calves obvious powers of resistance to tuberculous infection, whether the latter is natural or artificial. It would appear therefore that this method of tubercle prevention in young children might be regarded as having no dangers and that its efficacy is beyond question. Further observations and the time factor will enable more definite pronouncements to be made on the practical value of this prophylactic measure.

Monument to the Members of the Paris Medical Faculty who Fell in the War.

A monument raised to the memory of the doctors and medical students who died during the war was recently set up in the medical faculty of Paris. The monument, which has been placed in the Salle des Pas Perdus at the foot of the staircase which leads to the library, is a bas-relief designed by the sculptor Raoul Besnard. It represents a corner of a battlefield where, on the right, a young military doctor in a pensive attitude is gazing at a group of stretcher-bearers carrying a wounded man to the aid-post. Above, the inscription runs "Facultas Parisiensis erexit suorum memor, 1914–1918," and beneath are placed the names of nearly 500 doctors or students of the faculty who died for their country. The President of the Republic performed the unveiling ceremony and was assisted by Mr. Appel, the Rector of the University; Mr. Colville, the Director of Higher Education; Mr. Rouget, the Director of Sanitary Services; Mr. Guillaumin, President of the Municipal Council; Dr. Roger, Dean of the Faculty of Medicine; and several other dignitaries, including the President of the Academy of Medicine. Speeches were delivered by the representatives of various medical bodies. Prof. Chauffard spoke for the Société des Amis de la Faculté de Médecine de Paris, by whose efforts subscriptions had been secured to raise the monument, and Mons. Beau spoke on behalf of the students. A poem composed by Prof. Charles Richet was declaimed by Mlle. Madeleine Roche, of the Comédie Française.

THE VIENNA EXHIBITION OF HYGIENE.

(FROM OUR OWN CORRESPONDENT.)

IN May of this year there was opened in Vienna an Exhibition of Hygiene which is attracting large crowds of visitors and which will add considerably to general knowledge of this subject. The exhibition consists of three distinct sections. The first section deals with man, his anatomy and physiology; the second with hygiene in general, and the third with the modern household from a hygienic view. The dominating idea in promoting the exhibition was that hygienic knowledge and hygienic empiricism should become the common property of the public.

The Anatomy of Man.

By means of large wax and plaster-of-Paris models, diagrams, and pictures of the different parts of the body, by comparative charts and original wet and dry specimens of anatomical and physiological interest, the lay public is enabled to learn what kind of machine the human body really is. The value of social hygiene, the knowledge of the laws governing the development and destruction of life—in short, the "legislature of living"—is impressed on even the most unobservant and incurious visitors. The section pertaining to man in general has been brought over from Dresden, where it formed the bulk of the celebrated hygienic exposition there. It is subdivided into sections dealing with prehistoric development of mankind, the osseous system, the muscles, the organs of nutrition, respiration, circulation and secretion, the brain and nervous system, and the organs of the senses (eyes, ears). Dynamometers, accessible to every visitor, show the "man in the street," what force is exerted by his own flexor muscles of the hand, or how the jaw is able to exert a pressure of more than 50 kilos to the square centimetre in cracking a hazel-nut. The method of converting food articles into energy, as effected by the digestive organs, is explained by means of large models. An exhibit called the "transparent man" is a great attraction. It consists of a collection of specially treated specimens, made transparent or translucent without dissection. By means of a secret process, entire organs, like the legs or arms of babies, the stomach of an adult, the pregnant uterus at various stages, the adult kidney or heart, have been made so transparent to strong light that all the details are visible. The collection shows well the development of a human embryo from the fifth week up to birth, the centres of ossification, and the gradual development of all other organs. The exhibit is contained in a dark room, and the objects are viewed against strong electric light.

Hygiene and Public Health.

The second section of the exhibition, which is devoted chiefly to the problem of hygiene, is subdivided into individual hygiene, collective hygiene, and general hygiene or public health. The leading idea is here also to impress upon the mind of the visitor the necessity of adapting life to the laws of hygiene—i.e., cleanliness, soberness, ventilation. Diagrams, charts, pictures, and statistical data serve this purpose. Thus numerous pictures illustrate the ways of infection with tuberculosis; dust inhaled by children, contamination by spitting, playing in the gutter, eating dirty food, kissing or careless coughing by diseased persons are shown—in rather crude pictures—to be the potent source of propagating all sorts of illness, especially tuberculosis. We see also the prophylactic measures taken by large institutions, such as the sickness insurance clubs or *Krankenkassen*,

5590 were in Dublin. The total cost was £12,762, and the amount authorised £5313 as a grant. The medical treatment of school-children would be dealt with under the new Act, but the medical administration of that Act would not come into force till October next.

Dealing with tuberculosis grants, Mr. Burke said full schemes were in operation in 22 counties and two county boroughs, and partial schemes in other areas. As a result of the compulsory notification of tuberculosis there would be a substantially larger number of patients in the future. During the year a new sanatorium had been opened at Renmore, Co. Galway. That institution was already full, and its extension was under consideration. The general mortality from tuberculosis had decreased considerably in recent years. It was 2·0 per 1000 in 1904, and in 1923 it was 1·41.

Rockefeller Fellowships in Public Health.

A Selection Committee appointed by the Minister of Local Government and Public Health has chosen three names for the *Fellowships in Public Health* offered to the Irish Government by the Rockefeller Foundation. The selected candidates are John D. Carroll, M.B. N.U.I., Robert Condy, M.B. Dub., and James A. Harbison, M.B. Belf. All of them possess the Diploma in Public Health, and have already been engaged in public health work. Two of them (Dr. Carroll and Dr. Condy) had war service in the Royal Army Medical Corps. The new Fellows will study in the United States for a period of six months, according to a programme to be arranged by the International Health Board of the Rockefeller Foundation. They have pledged themselves to accept appointments as county medical officers of health on their return to Ireland.

Research Work in Mental Disease.

The Minister for Local Government and Public Health, in a letter addressed to the Joint Committee of the Grangegorman Mental Hospital, has suggested the establishment of an institute for pathological research in connexion with the hospital. He states that the scheme in its scope should extend not only to original research, but also aim at providing a pathologist capable of advising the medical officers of Grangegorman and the officers of such other mental hospitals as would lend financial support to the scheme. Further, the laboratory would be a centre in which post-graduate work in this special department of medicine could be undertaken; and it might be anticipated that in time assistant medical officers, who at present go to England for instruction for the period of their study-leave, could obtain in Dublin a course of instruction equally valuable.

The Committee referred the letter to the consideration of their medical superintendent, Dr. J. O'C. Donelan, who, in reply, expressed the opinion that a pathological laboratory at Grangegorman might be developed into a valuable centre for work and study, but he did not think there could be much field for it in the immediate future, as there were at present three excellent schools of pathology in Dublin—Trinity College, University College, and the College of Surgeons—who would, he is sure, give any help desired. The bigger scheme hinted at by the Minister might be developed later. A scheme for a central laboratory for all the Irish mental hospitals would involve the appointment of a really first-class man devoted to pathological work, who would require one or two assistants. The best results would be obtained by beginning on a small scale.

The scheme put forward by the Minister was strongly urged by the medical profession some 25 years ago, but the Government of the day postponed their support. Up to the present the pathological work done in Irish asylums has been trivial in amount.

ROYAL COMMISSION ON LUNACY AND MENTAL DISORDER.

FURTHER SITTINGS.

(Continued from p. 1151.)

The Commission resumed its sittings on June 10th, Mr. H. P. Macmillan, K.C., the Chairman, presiding.

Evidence of Two Members of the Wandsworth Board of Guardians.

The first witnesses were Mr. George Hill and Mrs. Glanville, two members of the Wandsworth Board of Guardians. Their submission was that the method of visitation carried out until a year or two ago, when the patients on visiting days were brought up and passed before the visiting guardians, was useless, and that in order to be of any real service there should be informal unnotified visitations, the guardians actually seeing patients in their usual conditions and surroundings. Section 201 of the Lunacy Act permitted these visits between 8 A.M. and 6 P.M. on any day, unless the medical officer stated that such visit would be injurious to a particular patient or patients. Mr. Hill said that when, five or six years ago, he first became a guardian he was told he could not visit the patients unless he intimated his wish beforehand. Asked whether the visitation as now carried on—namely, without prior notification—was considered an efficient safeguard against ill-treatment or other irregularity, Mr. Hill said he thought it was, and if a report was made by a patient and it seemed well founded, he reported it to his board. His committee (a special visitation committee) was not satisfied with the herding together of about 100 patients which in places obtained, and he thought there should be a classification according to the mental condition of the patients. In some institutions when these visits were paid there was considerable delay before the visitors from the board were admitted. At first, until he insisted, he did not see the patients in the wards in their actual every-day conditions.

Mr. Hill said he objected to puerperal patients being put into insane wards; they should rather be regarded as subjects for after-care, especially as they were usually quite harmless.

Mrs. Glanville said there were four large asylums within a three-mile radius at Epsom, and suggested that the very acute cases should all be in one building, and the other three should be set apart for cases according to their stage of recovery, the last being the institution from which they were discharged. More nurses and attendants would be available for the acute cases, and less would be needed for those requiring less attention and watchfulness, and in this way there would be economy in working.

The Question of Punishment.

Mr. Hill said he was satisfied that punishment went on in these institutions, and this would not have been known but for the efforts of the special visiting committee. He related a case of ill-treatment, which even the doctor did not know of until five days afterwards, and members of his committee were not allowed to go to the institution and interview the nurses and attendants concerned in it. On their next visitation this particular attendant was temporarily missing. An inquiry was held by the Board of Control, but at that inquiry the visitors were not allowed to be present. He believed the attendants in such a case stood by each other and would not divulge incriminating information.

Mrs. Glanville said that if Mr. Hill and she had been at the inquiry they would not have agreed with the report which was made, and they would have said it had come to their knowledge that punishment of patients was going on. It was possible to punish a patient without leaving a mark. In a case at Hanwell it was at first denied that there had been punishment inflicted by an attendant, but at the next visit the patient in question had two black eyes,

association It had however an out patient department where ex patients who felt they had some slight recurrence could come and talk over their symptoms If a long time had intervened, cases might be readmitted as in patients She thought there should be some such institution at every considerable centre and if possible, it was well to have it in association with the general hospital When the Royal Sussex Hospital was approached with this view in 1905 the idea was too new Laboratory investigations for the Lady Chichester Hospital was now done in the laboratory of the county hospital

Dr Boyle said she had visited and studied mental institutions in France Germany, Austria Canada and Belgium, and everywhere the view was held that if early cases of mental disorder could be treated many of them could thus be prevented from becoming certifiable at all When the Hove establishment was started the Continent and America were well in advance in this matter but to day the disparity had been largely remedied Her chief criticism of the continental clinics was that they took some cases which were too advanced so that they had locked doors and this interference with the patient s liberty did much to neutralise their great distinguishing feature as compared with the asylum She gave some instances of juvenile cases treated with an indication of the lines followed Sometimes cases were taken in on the recommendation of their doctor, but sometimes the latter s description of the case proved to be inaccurate and misleading Old patients were made welcome at a weekly ' club night,' and the witness hoped to see this social side developed much further

Dr Boyle was not enamoured of the idea of a provisional certificate as the public would not be likely to regard it as very different from the ordinary one If the mental hospitals did not receive acute recoverable cases Dr Boyle thought those institutions would become terrible places of despair and good medical officers would be very unlikely to be attracted to the work in them In a series of 23 acute cases only three became well in three months

Lady Chichester said that one acute case in the hospital would do a great deal of harm and would shake the belief of the public in its character The average stay of patients in this hospital was about two months

Dr Boyle said she was *not obsessed* by psycho therapeutic measures in treatment as many of the disorders were due to physical exhaustion and defects and the aim was then to remedy these If there were more such clinics people would see that there were various mentalities and what they led to

Asked by Sir Humphry Rolleston why cases of disseminated sclerosis were taken into this hospital Dr Boyle replied that she strongly favoured regarding the nervous system as a whole, and not making specialities of separate sections of it

Dr Boyle pleaded for greater freedom in these matters, for both doctor and patient The doctor should be free to treat a willing patient whenever he thought it desirable or possible, and the patient should be at liberty to go for treatment where he wished or where the doctor might send him She also favoured an unlimited number of licensed houses or private houses where patients could be treated, competition would keep up the standard of efficiency At present it was very difficult, and a long time was necessary to effect transfer of a patient from a mental hospital he did not like to another

THE MAUDSLEY HOSPITAL

Dr Edward Mapother, the medical superintendent of this institution, attended to give evidence as an individual who had had a good deal of experience of mental hospital administration Mr Macmillan who now took the chair mentioned that the Commission had recently visited the institution and inspected its research, teaching and voluntary treatment departments Dr Mapother said he thought there should be a better adaptation of the legal processes to the attitude of the patient towards treatment For instance he would make treatment a means of avoiding certification He also wished to see provision made for specialised types of institution which would deal in a separate way with recoverable cases and with chronic ones, also separately with patients who were objectionable and those who were quiet He further wished to see an extension of the provisions for teaching and research Certifiable patients included those able to coöperate in their own treatment those who were passive in this respect, and thirdly those who actively resisted efforts at treating them

Clinics —To the usefulness of clinics he thought there was a definite limit, in some cases they could not be regarded as substitutes for the mental hospital The Maudsley did not receive certifiable patients, all who were there could have their discharge on 24 hours notice Three fourths of those patients came via an out patient department of a hospital Some came on the recommendation of a mental specialist More cases, though still willing and recoverable were taken at the Maudsley Hospital than at Chichester House Non volitional cases should he thought, be dealt with in clinics so long as they were not a nuisance to others There were many recoverable cases among these

Observation Hospitals —Dr Mapother thought fresh recoverable cases not suitable for clinics should receive their first attention at observation hospitals A further reform he wished to see was that patients who had not reached the certifiable stage should be allowed to be private voluntary boarders they being subject to similar supervision and visitation to that exercised in the case of certified patients Contentment of patients would be arrived at if each institution had its own type of patient At present, certainly in the gardens refractory and quiet patients were in association He favoured the employment of female nurses for male wards In conclusion, he said he would like to see the accommodation at the Maudsley Hospital increased, and thought it would be a great advantage to have similar institutions in the chief centres of population

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MANCHESTER SANATORIUM FOR CONSUMPTIVES —The Manchester Public Health Committee has received provisional sanction from the Ministry of Health to its scheme for extending the Abergele Sanatorium for Consumptives The total cost of the scheme will be about £300 000 and it is proposed that ultimately the total number of beds will be increased to 510 It is proposed to put in hand at once an instalment to provide 210 beds at a cost of £183 708 The Ministry will make a grant of £180 per bed towards the cost, and contribute 50 per cent towards the maintenance charges including loan interest, and repayment This will be the largest sanatorium scheme undertaken in this country since the war

MEDICO PSYCHOLOGICAL ASSOCIATION —The eighty fourth annual meeting of the Medico Psychological Association of Great Britain and Ireland will be held from Monday, July 6th to Friday the 10th under the presidency of Sir Frederick Mott at the University Buildings Edmund street Birmingham On Tuesday the 7th at 11 30 A M, a lantern demonstration will be given by Dr David Orr on the Sympathetic Endocrine System, and the presidential address will be delivered by Sir Frederick Mott at 3 P M On Wednesday, the 8th, at 10 30 A M, Dr G A Auden will read a paper entitled Encephalitis Lethargica and its Psychological Implications and a lantern slide demonstration of the Lesions of Lethargic Encephalitis will be given by Sir Frederick Mott At 7 15 for 7 30 P M, the annual dinner of the Association will be held at the Grand Hotel Colmore row Birmingham On Thursday, the 9th at 10 30 A M Dr Graves will read a paper entitled Incidence of Chronic Sepsis in Mental Disease and Dr Pickworth will read a paper on the Iodine Content of Thyroid Glands On Friday, the 10th at 10 A M, Dr A M McCutcheon will read a paper entitled The Institutional Treatment of Mental Deficiency, with Special Reference to Occupational Training At 11 A M. Dr W A Potts will read a paper on Delinquency, followed by Dr Hamblin Smith on The Psychopathic Personality A pleasant series of excursions and visits to places of interest in the neighbourhood has been arranged The full programme may be obtained from Dr R Worth hon general secretary, Springfield Mental Hospital Tooting, London, S W

prognosis depending upon the character of the parasitic invasion of the incitant. In pneumonia, however, the parasitic invasion takes place immediately, whereas in scarlet fever, according to Blake's observations, it is preceded by a period of toxæmia which permits of complete and immediate neutralisation by the introduction of the serum. Such treatment may serve to prevent subsequent parasitic invasion and the development of septic complications which, once established, may not yield so readily to serum treatment. It is obviously of the utmost importance in the treatment of the disease that the anti-streptococcus serums which are now being distributed by a number of laboratories should possess the highest degree of potency.

"Scarlet fever streptococcus antitoxin" is listed among the new and non-official remedies in the *Journal of the American Medical Association*, May 2nd, 1925. Two different serums are described: one prepared by immunisation with the soluble toxin or filtrates of the hæmolytic streptococcus—standard of potency "each c.cm. neutralises at least 1000 skin test doses of scarlet fever toxin"; the other, by immunisation with living streptococci developing in the tissues—standard of potency "each c.cm. neutralises at least 10,000 skin test doses of scarlet fever toxin."

In the light of our present knowledge, there is no evidence that the serums differ materially in their action, which is similar to that of antitoxin. However, the potency of the serum in neutralising the skin test doses is of the utmost importance. During the past year we have been able to obtain serum of the highest potency by the method of Dochez.

I am, Sir, yours faithfully,

A. Wadsworth,
Director, Department of Health,
Albany, N.Y.

June 8th, 1925.

THE PENSIONABLE AGE.

To the Editor of The Lancet.

Sir,—In the annotation upon the pensionable age in your issue of May 30th last it is pointed out that heavy manual labour tends to shorten life, especially if indulged in after the age of 40. Raymond Pearl's opinion is quoted that all living organisms are like machines that can only transform a definite amount of energy and then die. As you put it, "the duration of life of an animal stands in inverse relation to the total amount of its metabolic activity." On reference to Dr. Pearl's book on the "Biology of Death" one finds that he quotes Prof. Max Rubner's view that all living organisms can only transform a limited amount of energy and that this is about the same for all and amounts to a mean of 191,600 calories per kilo. of body-weight.

According to this view a man comes into the world with a definite store of potential energy and when this is spent he goes out again, unless, indeed, death comes earlier from some intercurrent cause. This is an interesting theory and may be true, but surely there is another side to the question. One can imagine an elderly hypochrondriac calculating the total potential energy that heredity has bestowed upon him and coming to the conclusion that he must husband the little that he has left and hence must keep still and thus save what remains, like the poor miser with only a few coins left in his stocking. Thus being deprived of the exercise that in so many ways will help the proper functioning of his organs he may die sooner than he need, not because his energy is exhausted, but from some toxæmia or intercurrent infection, which gentle exercise might have averted.

Everyone will admit that hard physical exertion is bad for a man after middle life and will probably hasten his end, usually by damage to the circulatory apparatus, but on the other hand want of exercise also has a sting in its tail. One would like to see the powerful influence of The Lancet urging the value of gentle exercise as well as warning against the dangers of hard physical exertion in people of mature years.

I am, Sir, yours faithfully,

Toronto, Canada, June 11th, 1925. R. D. Rudolf.

THE PERIODICITY OF CHOLERA.

To the Editor of The Lancet.

Sir,—Sanitary work in India is of so variable and urgent a character that ordinarily it is impossible for those responsible for its administration to spare time to acquaint themselves with schemes and themes of their predecessors; if they deal effectively with the present and immediate future they well fulfil their duty. Major A. J. H. Russell, I.M.S., in his paper on the above subject in your issue of June 13th, has proved himself no exception to this dictum. He has found that "very little information of value has been recorded in connexion with the epidemiological features of cholera." Hence, he proceeded to examine statistics for a period of 25 years of cholera deaths in the Madras Presidency applied to "groups of districts according to the periods in which these districts were affected by the different monsoons." This was the method employed by one of his predecessors in office in 1891, and formed the subject of a paper[1] read before the first Indian Medical Congress. This was illustrated by a diagram founded on the figures of a decade; it inhibited monthly periodicity so markedly as, in after years, to justify it being termed the "Madras Cholera Clock." In the paper certain deductions were offered as to the various factors concerned. These are not unreasonable when considered in the light of more recent work showing the variability of the cholera microbe, the existence of carriers, and the epidemiological data recorded by such authorities as D. D. Cunningham, Cornish, Greig, Aldo Castellani, Simpson, Tamezo Kebeshima, Paul Clements, Salvador Rosario, Trenkmann, and Pettenkoffer (vide Sanitation No., Tropical Diseases Bulletin, 1919, vol. xiv., No. 1, pp. 13–17).

In pursuing this method of inquiry, Major Russell claims he has discovered a six-yearly periodicity in the Madras Presidency, and thus has been enabled to prevent "waste of effort in unnecessary directions at unnecessary times." He further notifies his intention of verifying this possibility in the rest of India. For differentiating the numerous factors concerned throughout so vast an area, he has set before himself no mean task, and epidemiologists will wish him all success; but, so far as the Madras Presidency is concerned, I suggest he has already at his disposal information of the nature he desires in the "Madras Cholera Clock." At p. 14 of the bulletin above referred to, he will find the writer of the note on the subjects states, "later observations showed him that if cholera were introduced into a district in other than the period following its chief monsoon, it would fizzle out"; in other words, suppression can confidently be hoped for by less effort than under the opposite condition. I am, Sir, yours faithfully,

W. G. King,
Colonel, I.M.S. (Ret.).

Hendon, N.W., June 22nd, 1925.

SALINE DRINK IN INDUSTRIAL FATIGUE.

To the Editor of The Lancet.

Sir,—The question of fatigue in industry, especially amongst those engaged in heavy and laborious work carried on in a high atmospheric temperature—e.g., stokers and foundry-men, &c.—is important from several points of view. Health, efficiency, and output are essential factors, both from the worker's as well as the employer's standpoint, and various methods have been devised to overcome the factor of fatigue. Ventilation, humidity, rest intervals, and motion study have been carefully studied by progressive firms, so as to eliminate, so far as possible, losses in labour efficiency, an important factor in industry. Whatever the actual cause of fatigue may be, whether it be due to the formation of lactic acid and carbon dioxide, which rapidly accumulates in the muscles, and later in the blood-stream, or whether this condition may be contributed to by the exhaustion

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[1] The Seasonal Prevalence of Cholera in the Madras Presidency Embodied in the *Transactions of the First Indian Medical Congress*, 1891.

Obituary.

ROBERT HENRY SCANES SPICER, M.D. LOND.,

CONSULTING SURGEON TO THE THROAT DEPARTMENT, ST. MARY'S HOSPITAL.

WE regret to announce the death of Dr. Scanes Spicer, which occurred on Thursday last, June 18th, at Graham-street, Chelsea, after prolonged illness.

Robert Henry Scanes Spicer was the son of an identically named father, also a physician, who practised at North Molton, Devonshire. He was born at North Molton in 1857 and received his medical education at St. Mary's Hospital, where he gained the first open science scholarship in 1877, and the scholarship in anatomy in 1881. At the University of London he graduated B.Sc. in 1877 with honours and qualified in medicine in 1883 with honours in medicine, forensic medicine, and chemistry. He also obtained the gold medal in botany at the Society of Apothecaries. He served the usual resident appointments at St. Mary's Hospital, extended his studies in Vienna, and proceeded to the M.D. Lond. in 1885, at which date he was resident *superintendent* of the Fulham Infirmary. In 1888 he was appointed surgeon in charge of the throat department at St. Mary's Hospital, and lecturer on diseases of the throat and nose. These appointments he held for 20 years, when he was appointed consulting surgeon to the department.

Apart from this intimate association with St. Mary's Hospital Dr. Scanes Spicer held many public appointments in connexion with his specialty. He was consulting surgeon to the Throat, Nose, and Ear School *for the Blind at Leatherhead, honorary* physician to the Royal Society of Musicians, and a Fellow of the French Société de Laryngologie. He was a vice-president of the old Laryngological Society, having been one of the original founders and the first honorary secretary. At the British Medical Association he was president of the Section for Nose, Throat, *and* Ear Disease in 1900.

He was a prolific author, contributing many articles upon his specialty to our own columns and those of the *British Medical Journal*, to the Transactions of the Clinical and Odontological Societies, and to the Proceedings of the Royal Society of Medicine. For the most part his papers were strictly confined to the surgery and pathology of the nose and throat. He was an early observer of the far-reaching consequences of post-nasal adenoids, and *made practical* communications on the surgery of the obstruction of the nose, on the treatment of chronic disease of the antrum, and the nasal relations of asthma. A large portion of his literary work was devoted to inquiry into the ætiological factors of malignant disease of the throat, and he made useful observations on the sites of origin in these growths, on their ætiological factors and their treatment. He was also the originator of some ingenious theories as to the mechanics of respiration. An interesting paper on this subject, in relation to malignant disease, was published in THE LANCET in 1910, in which he described the topographical anatomy and the rigid resistances of the larynx *and adjacent parts, as he considered them* to bear on the sites of initiation and maximum development of cancer of the larynx. Dr. Scanes Spicer had retired from practice when the war broke out, but returned to work and served for four years under the Ministry of Pensions. A serious breakdown in health led to his retirement, and for the last five years of his life he was a complete invalid.

Dr. Scanes Spicer *married* Mary Wilhelmina, daughter of Mr. F. H. Huelin, by whom he had two sons and one daughter. Mrs. Spicer, who survives him, was her husband's devoted companion during a long and distressing illness, and we desire to record our sympathy with her and her family.

EDMOND JOSEPH McWEENEY, M.D. DUB., F.R.C.P. IREL.,

PROFESSOR OF PATHOLOGY AND BACTERIOLOGY, UNIVERSITY COLLEGE, DUBLIN, NATIONAL UNIVERSITY OF IRELAND.

THE death occurred on June 20th of Prof. E. J. McWeeney, of Dublin. He suffered from a progressive nervous disease *for several* years past and death was not unexpected. A native of Dublin, Edmond McWeeney was educated at the Catholic University School in that city, and in the Collège de St. Bertin at St. Omer. He had a brilliant course in Arts in the Royal University of Ireland, ending with the university studentship in modern languages, which he won at the age of 21. Thereafter he could devote his full time to medicine, and he passed the final examinations *with honours* in 1887. *He* subsequently studied pathology in both Vienna and Berlin. In 1891 he was appointed professor of pathology and bacteriology in the Catholic University School of Medicine, and in 1908, when that school became the School of University College, he continued as professor and head of the department. He was also bacteriologist to the Local Government Board and pathologist to many of the city hospitals. He was elected a Fellow *of the* Royal College *of* Physicians *of* Ireland in 1905. Though the work entailed by his various offices would have fully occupied the time of a less energetic man, McWeeney found leisure to give to research. He kept in touch with work done in British and Continental laboratories, and with little assistance, and for many years with inadequate equipment, he performed an enormous amount of work and published frequently in the scientific journals. His class *teaching* was lucid and thorough and his demonstrations to the Royal Academy of Medicine were perfect in their arrangement and clearness. Personally, he was a man of wide general culture, well read, much interested in botany as well as in his own subjects, and in his younger days a great walker. Seven or eight years ago, while in the full vigour of work, his health failed, and although he continued to perform some of the duties of his chair he was cut off from most of his activities. His eldest son, who had a distinguished career in the Air Force during the war, is now a member of the medical profession.

THE LATE DR. A. W. S. SMYTHE.—Arthur William Stafford Smythe, F.R.C.P. & S. Edin., L.R.F.P.S. Glasg., died at Oxton, Birkenhead, on May 31st, at the age of 57. After studying in Dublin Mr. Smythe qualified L.R.C.P. & S. Edin. and L.R.F.P.S. Glasg. in 1891. Mr. Smythe was formerly medical officer on the West African medical staff in Southern Nigeria, and at the time of his death was in practice in Birkenhead, where he had resided for many years.

THE LATE DR. J. F. CARRUTHERS.—John Ferguson Carruthers, M.D. Edin., who died recently in his 67th year at Liphook, Hants, where he had lived in retirement for a few years, was the eldest son of Mr. Walter Carruthers, of Inverness, and a grandson of Robert Carruthers, LL.D. At 14 years of age he won a scholarship at Fettes College, Edinburgh. He was successful both in his work and in his games, winning *prizes in sport at Fettes, and becoming a good cricketer.* After an adventurous period in many parts of the world, he qualified M.B., C.M. at Edinburgh University in 1892 and gained the M.D. Edin. with honours in 1897. He practised for several years at Revelstoke in British Columbia, where he was medical officer of health. From 1903–5 he studied at Moorfields Eye Hospital, and then took up ophthalmic practice at St. Peter Port, Guernsey. Soon after the outbreak of the war he was appointed ophthalmic specialist at the Royal Herbert Hospital, Woolwich, where he remained till 1922. His duties in this post were extremely arduous, and it cannot be doubted that his unremitting work undermined his health. In 1922 he was appointed ophthalmic specialist at Bagdad in the R.A.F. with the rank of squadron leader, but did not take up the post, and shortly afterwards retired. He married a daughter of Mr. W. Scott, of Edinburgh, who survives *him*.

and commented favourably on the type of practitioner in Edinburgh He said that there was no undue haste on the part of doctors in the city to adopt novel methods, unless these had been proved to be of value

Newcastle.—On Saturday, June 20th some 8[illegible] members of the Assembly visited Newcastle and inspected the principal hospitals. The guests were welcomed at the Royal Victoria Infirmary by Lord Armstrong (chairman of the house committee), Sir Thomas Oliver, Dr Thomas Beattie, Dr A M Martin (chairman of the hon medical and surgical staff), and Dr R A Bolam Surgical operations were then witnessed, and the various departments were inspected, followed by a visit to the College of Medicine and the War Pensions Hospital A civic luncheon was held in the Grand Assembly Rooms, where the guests were received by the Lord Mayor and the Sheriff. Dr Mayo, replying to the toast of "Our Distinguished Guests" proposed by the Lord Mayor, said that in recognition of the beneficent work carried out by the Royal Victoria Infirmary it had been resolved to make Lord Armstrong, Prof Rutherford Morison, Dr Beattie, Dr Martin and Mr G Grey Turner honorary members of the Inter State Post Graduate Assembly of America

West London Medico Chirurgical Society.—The annual general meeting of this society will be held at 5 o'clock on Friday, July 10th, at the West London Hospital, W. 14.

Society for the Study of Inebriety.—A meeting of this society will be held in the rooms of the Medical Society of London, 11, Chandos-street, Cavendish square, London, W, on Tuesday July 14th, at 4 P.M., when Dr C W. Saleeby will open a discussion on Sunlight and Alcohol.

Tuberculosis Society.—The annual *meeting* of this society will be held on Tuesday, July 7th, at Pritchard's Restaurant, 70 Oxford street, London, W. The meeting will be preceded by a dinner at *5s 6d* per head, and it is hoped that as many members as possible will attend It is requested that those intending to be present should notify the Hon Secretary, 138, Herbert road, Woolwich, S E 18, as early as possible

Epsom College.—The Council of Epsom College will shortly elect two girls to St Anne's Home Scholarships of £18 a year Candidates must be fully 7 years of age and not over 12, and must be necessitous orphan daughters of medical men who have been for not less than five years in independent practice in England or Wales Application must be made on a form to be obtained from the Secretary, 49, Bedford square, W C 1, by July 7th

Powell v. Maybury.—The hearing of an action brought against Dr Lysander Maybury, senr, of Southsea, by Mr. Percy John Powell, for alleged improper medical treatment and negligence, was concluded at the Hampshire Assizes on Saturday before Mr Justice Shearman and a special jury. The jury awarded the plaintiff £1000 damages. We understand that an appeal has been lodged

The Royal West Sussex Hospital.—Lord Woolavington, of Lavington Park, Sussex, has in response to a letter from the secretary of this institution pointing out the urgent need of funds, forwarded a cheque for £1000 At the annual meeting of the governors in April a deficit of £1621 was reported on the year's working

London Dermatological Society.—A meeting of this society was held at St John's Hospital, London, on June 17th, when the annual oration of the society was delivered by Prof Dubreuilh (Bordeaux) on *Chronic* Sunburn and Epithelioma of the Skin (An abstract of this address appears on p 1355 of this issue) A vote of thanks to the orator was proposed by Dr Knowsley Sibley and supported by Dr J L Bunch and Dr Prosser White Prof Dubreuilh replied The annual general meeting was then held, when the following officers were elected for the ensuing session Patron The Earl of Chesterfield, K G President Dr William Griffith Council Ex officio *members* of the staff of *St John's Hospital*—Dr W Griffith, Dr Knowsley Sibley, Dr W Fox, Dr H MacCormac, Dr S E Dore, Dr. J M H MacLeod, Dr A C Roxburgh, and past presidents of the society Dr A T Bremner Dr J L Bunch, and Dr Prosser White, together with Dr Knyvett Gordon, Dr S R Kapoor, Dr R H Rattray, Dr R H Scovell, and Dr D Vinrace Hon Treasurer Dr Knowsley Sibley Secretary Miss M *Atkinson* Pathological Sub committee Dr Griffith, Dr Knyvett Gordon and Dr R E Fagan The annual dinner of the society was held the same evening at the Trocadero Restaurant, Prof Dubreuilh being the guest of the evening

Sunlight Clinic for Hull Children.—In April, 1924, Hull established the first municipal clinic for the treatment of rickety children by artificial sunlight, and so great has been its success that it is to be greatly enlarged At *present only 20 children can be treated at once, and there* is, naturally, a long waiting list

Enlargement of St Cross Hospital, Rugby.—Mrs Arthur James the *president of this hospital*, has undertaken the cost of enlarging it in memory of her late husband St Cross is a 100 bed hospital which has been doing the work of a much larger institution and its resources will now be increased to from 12[illegible] to 130 beds *It is an* approved hospital for the treatment of non pulmonary tuberculosis and of venereal diseases

Berlin International Post Graduate Courses.—The following post graduate courses organised by the Faculty of Medicine of Berlin University, will be held in Berlin in October (1) Special courses on all branches of medicine dealing especially with *those subjects* that are of present interest to the profession as a whole These courses include practical work (2) A series of lectures on internal medicine with special reference to diagnosis and therapy in general practice (3) Systematic review of the progress of medical science and technique (4) Post-graduate course for oculists Further details and a full programme of the courses may be obtained from the offices of the *International Post Graduate Courses Kaiserin* Friedrich Haus für das ärztliche Fortbildungswesen, Luisenplatz 2–4, Berlin N W 6

Medical Golfing Society.—The annual summer meeting was held at Moor Park on June 11th Over 90 members took part in a most successful tournament The results were as follows, all the competitions being against bogey —The Lancet Challenge Cup (*scratch*) H D Gillies 3 up Henry Morris Challenge Cup (*handicap*) J O Malley (6), all square Milsom Rees Challenge Cup (scratch return in second class) H P Aubrey, 5 down Class I —First prize, L E *Barrington Ward (9) all square* Second prize L Forest (8), L. Welply (8), G Norman (10), A. H Vassie (11), and J Grace (7), tied at 1 down Class II —First prize G I Wilson (14) all square Second prize C V Mackay (11), 1 down *Best last nine holes* W. A Rogerson (12), 1 down Foursomes G P. Kennedy (8) and L Welply tied with Arthur Evans (8) and S G. Bonnalie (5)

Livingstone College Commemoration Day.—On June 10th Commemoration Day was held at Livingstone College, Leyton, London E, Dr Andrew Balfour in the chair Dr Tom Jays *the Principal, made a short statement* as to the financial position of the College, showing that about £800 was needed in order to close the current financial year without a deficit He showed *that the need* was for more students, as owing to the *lessened* numbers entering since the war, and also to much extra necessary expenditure, the financial burden was heavy He spoke of the world wide influence of Livingstone College, the students of which were now scattered in almost *every part* of the globe Dr Balfour said that what had impressed him extremely in his knowledge of the work of Livingstone College was the way in which the students were trained in persistency in their studies and work "*Persistence*' he said, "is a great matter, it is needed as much in missionary labours as in medical work In the mission field there is often great discouragement at the small signs of progress' He pointed out that in addition to *learning* something of medicine and surgery, the students also learned preventive work in hygiene as applied to tropical disease 'There is,' he said, a vast deal of common-sense in public work, and much can be done by following *certain* rules It is a saner plan to keep folk well than to cure them when they have fallen ill *beside* a saving of a vast amount of money' The Rev H Wakefield, a student of the Primitive Methodist Mission, Calabar, West Africa, said he had often wondered what would happen if old Livingstonians all the world over were *to* send their testimonies of what Livingstone College had done for them It would not be a story of increased salaries, of promotion *to the heads* of departments, but a story of gigantic struggles against disease and squalor It would be a great human document of *combating* death, of alleviating pain, of fighting with customs against disease against those *forces* which make men miserable and unhappy Mr F Kilbey, of the Friends Foreign Mission Central *Provinces*, India, a student of the first session told of his 30 years' work in the field, and of the work he had been enabled to do through the knowledge he had gained 'I would advise every man and woman,' he said, 'who *contemplates* residence in India to take such a course as Livingstone College offers, and I feel sure that anyone who avails himself of it will be able to give like

INDIAN MEDICAL SERVICE: ANNUAL DINNER

NINETY-TWO officers of the Indian Medical Service—the same number as a year ago—sat down to the annual dinner at the Trocadero, London, on June 17th. Lieut.-Colonel A. W. Alcock, C.I.E., F.R.S., occupied the chair, and the other members present were as follows:—

Major-Generals Sir R H Charles, G.C.V.O., K.C.S.I., Sir G G Giffard, K.C.I.E., C.S.I., G J A Harris, C.S.I., P Heard, C.I.E., Sir P Hehir, K.C.I.E., C.B., C.M.G., H Hendley, C.S.I., A Hooton, C.I.E., J B Smith, C.B., C.I.E.

Air Commodore D Munro, C.B., C.M.G.

Colonels H Ainsworth, A Coleman, J Crimmin, V.C., C.B., C.I.E., A A Gibbs, F A Granger, C.M.G., F A Hamilton, C.M.G., A J Macnab, C.B., C.M.G., F L Perry, D.S.O., J J Pratt, H Austen Smith, C.I.E., C N C Wimberley, C.M.G.

Lieut.-Colonels W G P Alpin, O.B.E., J Anderson, C.I.E., K E Baird, G T Birdwood, J W G Bradfield, O.B.E., J T Calvert, C.I.E., D G Crawford, J M Crawford, O.B.E., C D Dawes, C I Dunn, A M Fleming, A T Gage, C.I.E., E A Hughes, C.M.G., T Hunter, C.I.E., G H James, C.I.E., S P James, J G Jordan, R S Kennedy, D.S.O., M.C., J C G Kunhardt, Clayton Lane, W B Lane, C.I.E., C.B.E., W H Leonard, R McCarrison, C.I.E., F O N Mell, C.I.E., A Miller, J E Mulvany, J G P Murray, F O'Kinealy, C.I.E., C A O [illegible] Rainier, G H Reinhold, Sir J R Roberts, C.I.E., Sir L Rogers, C.I.E., F.R.S., L R Rost, O.B.E., H E [illegible] Leathes, S Browning Smith, C.M.G., J Steen, Ashton Street, W A Sykes, D.S.O., C Thomson, W H Thornhill, J H Tull Walsh, H J Walton, C I Williams, Elliott I Ward, D P Warliker, N M Wilson, O.B.E., H O I Wortabet, A C Younan.

Majors H I Batra, O A R Berkeley Hill, Sir T J Carey Evans, M.C., P A Chalmers, O.B.E., D Coutts, M.B.E., G F Graham, A I Griswold, R Knowles, E L M Newland, P M Rennie, C J Stocker, M.C.

Captains P M N Antia, H J Barker, S D Billimoria, Leo Blake, H Horan Brown, H E [illegible], W E Hogg, M.C., N S Jatar, D.S.O., V R Mirajkar, G S V [illegible], W C Spackman, P Vieyra.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS

Budget Concession to Medical Men

A CONCESSION of some importance to medical men was granted by the Chancellor of the Exchequer during the Committee stage of the Finance Bill as the result of an amendment moved by Lieut.-Colonel FREMANTLE. It provides that the allowance of income-tax deductions in respect of the wear and tear of machinery and plant and in respect of expenses incurred in replacing obsolete machinery or plant shall in future apply to a profession, employment, vocation, or office as well as a trade. Under this new clause a doctor's motor-car, if used in the course of his practice, will count as machinery and plant, and it will therefore be possible for a medical man to claim a deduction for the wear and tear of his car caused by its use for professional purposes. The exact amount of the deduction will be subject to arrangement between the taxpayer and the income-tax authorities.

Nursing Homes (Registration) Bill

On June 10th Mr HURST moved the second reading of the Nursing Homes (Registration) Bill, the principle of which, he said, was agreed to by all parties in the House. Captain ELLIOT (Under Secretary for Health, Scotland) said it was not possible to consent to the second reading of the Bill at that stage, but if the hon. Member would withdraw it he could make a promise on behalf of the Government to refer the subject of nursing homes to a Select Committee for inquiry. The Bill, on this undertaking, was withdrawn.

Public Health Bill

On consideration of the Public Health Bill, as amended in Standing Committee on June 10th, Mr H WILLIAMS moved a new clause which, he said, had been put down on the recommendation of the Royal Sanitary Institute. Its object was to isolate food intended for sale from causes of contamination, and gave the medical officer, sanitary inspector, and any other officer of the local authority the power to inspect a room in which food was kept in order to see that the provisions of the clause were being complied with. The clause was read a second time and added to the Bill. The Bill, which is a measure consolidating a number of powers conferred on certain local authorities by private legislation and making them applicable to the whole country, was read a third time.

HOUSE OF COMMONS

THURSDAY, JUNE 18TH

Medical Referees and Letters to the Press

Mr JOHN BAKER asked the Home Secretary whether his attention had been drawn to a letter from a medical referee under the Workmen's Compensation Acts which appeared in the *Morning Post* of June 5th; whether officers who were paid by the Ministry were allowed to express in the public press, opinions contrary to the Acts which they were administering, and whether medical referees were governed by the ordinary rules governing the Civil Service, which prohibited officials from communicating to the press on matters connected with their employment.—Sir W. JOYNSON HICKS replied: I have seen the letter. Medical referees are not Civil servants but private practitioners paid by fees for their services in connexion with applications for compensation. No rules have been laid down as to communications by them to the press on subjects connected with the Acts, but I am sure that the referees generally appreciate the responsibility in this matter entailed by their special position.

Powers of Medical Referees

Mr JOHN BAKER asked the Home Secretary whether his attention had been drawn to a reserved judgment by his Honour Judge Ruegg, K.C., at Stoke County Court on June 3rd regarding the powers under the Workmen's Compensation Act of a medical referee; whether, seeing that it had been decided that a medical referee under the Act had authority to decide not only whether or no the man was suffering from the disability but also whether or no he was fit for employment, he would consider the desirability of taking such action as might be necessary to limit the powers of the medical referees merely to deciding the question of the disability from which a man was suffering; and whether he would consider granting compensation to a man (F. B.) who was, at the time of his examination by the certifying surgeon, suffering from miner's nystagmus and was thereby disabled from obtaining employment.—Sir W. JOYNSON HICKS replied: This case was one under the Industrial Diseases Section of the Act of 1906, and by that section the question whether a worker is disabled by an industrial disease from earning full wages at his ordinary work has to be determined by the certifying surgeon in the first instance and, on appeal, by the medical referee. The suggestion in the question would involve a complete change in the present system which has been in force for nearly 20 years and has on the whole worked well, and would apparently leave the question whether or not the worker was disabled by his disease to be fought out in the courts. I do not consider such a change is either necessary or desirable. In reply to the last part of the question, I have no power under the Act to grant compensation. This can only be done by the courts.

Ambulances and London Street Accidents

Colonel DAY asked the Home Secretary if he was aware that a person meeting with an accident in the streets of London, however serious his condition might be, was compelled to await the arrival of an official ambulance before he could be removed; and would he examine these regulations with a view to the betterment of these conditions.—Sir W. JOYNSON-HICKS replied: I know of no such regulations. The instructions to the police are to give the sufferer the first consideration, and if an ambulance is not readily available to employ a cab or other vehicle if the patient's condition appears to justify it. It must, however, be borne in mind that it is dangerous to move cases of many common types of injury in any vehicle but an ambulance. If the hon. Member will give me an instance where it was desirable to move a patient quickly and a refusal was given I will look into it.

Medical Men and Unattended Motor-cars

Mr NEIL MACLEAN asked the Home Secretary whether he was aware that regulations existed which rendered medical men liable to prosecution if they left a motor-car unattended in the street; and whether he proposed to issue a regulation exempting them when these circumstances arose in the course of their professional duties.—Sir W. JOYNSON HICKS replied: Medical practitioners are not exempt from the ordinary law as to driving offences, and I understand that the Minister of Transport does not think it practicable to make exceptions to the existing law or regulations in favour of any particular class of persons. The police, of course, exercise discretion in regard to prosecuting for obstruction when it is caused by a doctor's attendance on a patient.

is advised that the preparation of the statistical returns in question is properly a duty of these committees and he sees no justification for transferring the charge to the Exchequer. Representations in the sense indicated in the question were received from the Insurance Committees for Berkshire, Middlesex, the West Riding of Yorkshire, Birkenhead, Brighton, Liverpool, Reading, and Wigan

Provision of Local Pathological Laboratories

Mr GROVES asked the Minister of Health whether he had considered the handicap to local medical research committees in the non provision of pathological laboratories in connexion with local hospitals and whether in connexion with the Government's plans of research work, he would consider the provision of such equipment for the use of local medical men —Sir KINGSLEY WOOD (Parliamentary Secretary to the Ministry of Health) replied: There are no funds available at present for the provision of pathological laboratories for the assistance of local committees of this kind In any future developments of health policy the provision of such laboratories will be borne in mind

Hospitals for Expectant Mothers

Colonel DAY asked the Minister of Health whether, in view of the heavy death-rate among women during childbirth, due to conditions over which they had no control, he would take such action that would result in local authorities providing a greater measure of hospital accommodation for expectant mothers, and, in cases of necessity, would he consider making provision for payment of cash grants to the mother or to such associations as already provided assistance to mothers both during and after childbirth —Mr N CHAMBERLAIN replied: As regards the first part of the question I would refer the hon and gallant Member to the answer which I gave on May 20th on this subject As regards the second part I would point out that grants are already made from the Exchequer to local authorities and nursing associations which provide skilled assistance during childbirth, and that every woman who is the wife of a man insured under the National Health Insurance Act is entitled to receive a sum of £2 as maternity benefit on her confinement, and if she is herself insured a further sum of £2 The whole question of the provision to be made for maternity in the case of insured women and the wives of insured men will doubtless receive the consideration of the Royal Commission on National Health Insurance, which is now sitting

Consumptives in London Prisons

Colonel DAY asked the Home Secretary if he was aware that there were insufficient cells set apart for prisoners suffering from tuberculosis in Pentonville and Brixton prisons, and, in consequence such prisoners were sometimes put in the ordinary cells, would he take immediate action to improve the accommodation of sufferers from this disease in prisons; and, would he state if all ordinary cells so used were thoroughly disinfected after tuberculous patients had left them —Sir W JOYNSON HICKS replied The special cells for tuberculous cases, four at Brixton and eight at Pentonville, are sufficient for the usual average numbers of such cases Ordinary cells are not now used for tuberculous patients When the number of cases exceeds the number of special cells, the patients are taken into the prison hospital and the rooms so used are disinfected afterwards

DONATIONS AND BEQUESTS —The late Miss Pringle Home Douglas, of Edinburgh, left by will among other bequests, £1000 to the Edinburgh Royal Infirmary, for general purposes other than building and £500 to the Convalescent Home, Murrayfield, in connexion with the Edinburgh Royal Infirmary —Mr William Shillito of Wootton, Eccleshall, Staffs, left the residue of his property, amounting to about £5000, to the Stafford General Infirmary, where he had formerly been a patient —Mr Henry Hayward, of Kennington, S E, and Eastbourne, left £1000 to the Royal Hospital for Incurables, Putney, and £700 each to Dr Barnardo's Homes, Fegans' Homes, Spurgeon's Orphanage, Children's Convalescent Homes, and Muller's Home, Bristol —Sir Edward Elias Sassoon left £5000 to his executors for such charitable objects as they may think fit —Mr James Baugardt Elmslie, of Hyde Park, W, left £1000 to St Mary's Hospital, Paddington —Mrs Louisa Sophia Nourse, of Surbiton and Brighton, left £2000 to the Seamen's Hospital Society (Dreadnought), Greenwich, S E, to endow two beds for the treatment of seamen in memory of her late husband, £1000 each to the Metropolitan Convalescent Institution, Victoria street, S W, the Samaritan Free Hospital for Women, Marylebone road, and the Hospital for Epilepsy and Paralysis, Maida Vale —Mr John Ratcliffe, J P, of Micklehurst, Cheshire, left £2000 to Oldham Infirmary. —Colonel Thomas Johnson Seppings, of The Grange, King's Lynn left £2000 to the West Norfolk and Lynn Hospital, of which £1000 are for a Seppings bed in the men's ward

PROPOSED MEDICO-LEGAL INSTITUTE FOR LONDON.

THE annual meeting of the Medico Legal Society was held in the Barnes Hall of the Royal Society of Medicine on June 23rd, under the presidency of Lord Justice Atkin, when a discussion took place on the suggestions made by a committee of the Council with the object of establishing in the metropolis a medico legal institute

The President said that no more important meeting had ever been held by the Society, nor could a proposal of greater seriousness be put forward in connexion with the matters with which the Society concerned itself It was almost incredible to see how little provision was made in this great city for medico legal research and teaching of any serious nature, in which lack London probably stood alone among the great centres of the world Here there was no central institute, laboratory or museum, nor any organisation for giving unified teaching on such subjects In saying this he fully realised that the medical schools were doing all they could in the matter according to the resources at their command No one who had had anything to do with the administration of justice in this country could fail to appreciate the extraordinary importance of the proper development of medico legal learning in reference to securing that justice was done, no session of any criminal court was ever held where topics of the greatest medico legal importance were not introduced, and hence where it was not of the utmost importance that highly informed expert advice should be placed before the court. Though the country had been fortunate enough from time to time to be in possession of two or three really eminent experts upon whom reliance could be placed, it was still unfortunate that there had been no institute which would secure the general education of a sufficient number of people in the very highest branches of medico legal work From the point of view of justice, when an expert was good he was very good, but when he was bad he was horrid The need for this organised special training was even greater for defence than for prosecution, so as to arrive at the real truth

Obviously in these days research must be unceasing, the modern criminal was making himself acquainted with all the latest developments of science, and it was essential that the State should be at least equally well armed

Another matter of paramount importance was that instruction in medico legal subjects was now part of the regular vocational instruction of those seeking a medical qualification, but clearly that instruction given at a number of different schools, none of which was specially equipped for the purpose, must be quite different from what that instruction would be if it could come from a central institute under the guidance and inspiration of some authority. He considered that proper instruction in medico legal matters was as important for those who would practise the law—especially those in the criminal courts—as for those proposing to adopt the medical profession

It was obviously impossible that such a far-reaching scheme as this could be carried out to any considerable extent by a society which was simply a scientific society Very large interests were concerned The Ministry of Health and the Home Office would be closely concerned with it; also public municipal bodies, and particularly the county council on account of its interests in the coroners Similarly the great teaching bodies and London University were concerned It would be impossible for such a project to proceed without the cooperation and benevolent interest of those various bodies

The Need for Research

Sir Bernard Spilsbury pointed out that proposals set out in the circular were

A Resolution Carried

The President briefly summed up and replied to some of the points raised in the discussion. A Royal Commission, though sometimes bringing desirable results, had, on occasion, proved a means of shelving a subject. He did not think the Home Office or any other department would seek to manage such a concern. He agreed that industrial diseases and questions might well come within the range of the institute's activities. There was still much requiring to be done in association with the kind of problems which were continually being brought into the courts. There could be no idea of at once starting in a splendid building fully equipped, but it was essential that some sort of start should be made, and then, he did not doubt, the matter would develop. His lordship proposed, from the chair: "That this meeting expresses its general approval of the proposal for establishing a medico-legal institute, and requests the Committee to take such steps as they may think necessary to develop the proposal in cooperation with all interested parties, with power to add to their number." This was unanimously carried.

The President said the Committee would report to the Society from time to time when any definite results could be communicated.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

Wednesday, July 1st.

ANNUAL GENERAL MEETING OF FELLOWS, at 5 P.M.
To receive the annual report of the Council.
Election of Officers and Council for Session 1925–26.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, June 29th, to SATURDAY, July 4th.—WEST LECTURE HALL, Royal Society of Medicine, 1, Wimpole-street, W. Lecture arranged by the Fellowship of Medicine and open to all members of the medical profession. At 5.30 P.M. on Friday, July 3rd, Sir John Thomson Walker on Urinary Infections.—LONDON TEMPERANCE HOSPITAL, Hampstead-road, N.W. Special Post-graduate Course for Practitioners. Second week. Daily, 4.30 to 6 P.M. Clinical demonstration for one hour on medical and surgical cases, the ultra-violet lamp, Some Syphilitic Skin Lesions. Lecture for half an hour.—ST. PETER'S HOSPITAL, Henrietta-street, W.C. Post-graduate Course in Urology. Clinical work every afternoon in the Hospital. Lectures: Monday, Mr. J. Alban Andrews on Genito-Urinary Tuberculosis; Tuesday, Mr. J. Swift Joly on Urinary Calculi; Wednesday, Mr. Clifford Morson on Urinary Antiseptics; Thursday, Mr. I. J. F. Harrington on Non-Tuberculous Infections of the Urinary Tract; and Friday, Sir John Thomson Walker on Urinary Obstruction.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.

MONDAY, June 29th.—12 noon, Mr. Simmonds: Applied Anatomy. 2 P.M., Mr. Donald Armour: Operations. 2 P.M., Mr. Bishop Harman: Eye Dept.

TUESDAY.—10 A.M., Medical Registrar: Clinical Methods. 12 noon, Dr. Burrell: Chest Cases. 2 P.M., Mr. Addison: Operations.

WEDNESDAY.—2 P.M., Dr. Burnford: Medical Wards. 2 P.M., Dr. Owen: Medical Out-patients. 2 P.M., Mr. Tyrrell Gray: Operations.

THURSDAY.—10 A.M., Dr. Grainger Stewart: Neurological Dept. 12 noon, Surgical Registrar: Surgical Pathology. 2 P.M., Mr. MacDonald: Genito-Urinary Dept.

FRIDAY.—11 A.M., Dr. McDougal: Electrical Dept. 10.30 A.M., Dr. Dowling: Skin Dept. 2 P.M., Mr. Sinclair: Surgical Out-patients.

SATURDAY.—10 A.M., Dr. Saunders: Medical Diseases of Children. 10 A.M., Mr. Banks Davis: Operations on Throat, Nose, and Ear.

Daily, 10 A.M. to 6 P.M. Saturdays, 10 A.M. to 1 P.M. In-patients, Out-patients, Operations, Special Departments.

QUEEN CHARLOTTE'S MATERNITY HOSPITAL, Marylebone-road, N.W.

THURSDAY, July 2nd.—5 P.M., Mr. L. G. Phillips: Intracranial Hæmorrhage.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

TUESDAY, June 30th.—4.30 P.M., Dr. I. Thomson: Cases illustrating the Early Diagnosis of the Infectious Fevers (at the North-Eastern Hospital, St. Ann's-road, N.).

FRIDAY.—4.30 P.M., Mr. Aubrey Goodwin: Expectant Obstetrics.

Daily.—Clinics in General and Special Departments, Demonstrations, Operations, &c.

THE LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, Leicester-square, W.C.

TUESDAY, June 30th.—5 P.M., Dr. Roxburgh: Diseases of Nails.

THURSDAY, July 2nd.—5 P.M., Dr. Haldin Davis: Peculiar Forms of Psoriasis.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.

THURSDAY, July 2nd.—4 P.M., Dr. Nabarro: The Cerebrospinal Fluid in Health and Disease.

Appointments.

HOSKINS, W. D., L.R.C.P. Lond., M.R.C.S., has been appointed Certifying Surgeon under the Factory and Workshop Acts for the St. Just District of the County of Cornwall.

INGRAM, JOHN T., M.B., B.S. Lond., M.R.C.S., Physician to Out-patients to the Evelina Hospital for Sick Children, Southwark.

SYMONS, A. D., M.D. Bristol, M.R.C.S., D.P.H., Medical Officer of Health, School Medical Officer, &c., for Shrewsbury.

University of Leeds: DOBSON, J. I., M.S. Lond., F.R.C.S. Eng., COLLINSON, H., M.S. Lond., F.R.C.S. Eng., Professors of Clinical Surgery; BRAITHWAITE, L. P., M.B., Ch.B. Manch., F.R.C.S. Eng., Director of Surgical Research.

Vacancies.

For further information refer to the advertisement columns.

Aberdeen University.—Second Asst. in Pathology. £2 0 12s.
Birmingham City Mental Hospital.—Asst. M.O. £350.
Birmingham and Midland Hospital for Skin, &c.—Hon. S.
Bloomsbury Dispensary, 12, Bloomsbury-street, W.C.—Res. M.O. £250.
Bolingbroke Hospital, Wandsworth Common, S.W.—Hon. Asst. S. to Ear, Nose, and Throat Dept.
Bolton Townleys Hospital, Farnworth.—Second Asst. M.O. £225.
Bradford Royal Infirmary.—Res. Surg. O. £250.
Bury County Borough.—Asst. M.O.H., &c. £600.
Cambridge, Addenbrooke's Hospital.—H.S. at rate of £130.
Chester Royal Infirmary.—Hon. Asst. S.
City of London Hospital for Diseases of Heart and Lungs, Victoria Park, E.—Res. M.O. £250. Also H.P. at rate of £100.
Colindale Hospital, Hendon, N.W.—Jun. Asst. M.O. £500.
Croydon County Borough.—Asst. M.O.H. and Asst. Sch. M.O. £600.
Croydon General Hospital.—Cas. H.S. £100.
Dover Borough.—Asst. M.O.H. £750.
Dudley Guest Hospital and Eye Infirmary.—H.S. £175. Also Asst. H.S. £150.
Dumfries and Galloway Royal Infirmary.—Jun. Res. M.O. £125.
Dundee University College.—Chair of Anatomy.
Edinburgh, Chalmers's Hospital.—Res. M.O. and Res. S.O.
Epsom, The Manor.—Jun. Asst. M.O. £140.
Halifax Royal Infirmary.—Hon. Radiologist.
Hospital for Consumption and Diseases of the Chest, Brompton, S.W.—H.P. for six months. £50.
Hull Institution Infirmary, Beverley-road.—Res. Asst. M.O. £350.
Ilford Urban District Council.—Asst. M.O.H. £600.
Liverpool, Mill-road Infirmary.—Res. Asst. M.O. £200.
Liverpool, St. Paul's Eye Hospital.—Two Hon. S.s.
London Hospital Dental School, E.—Asst. Dental Anæsthetists. £25 each.
London Hospital, E.—Two Hon. Asst. Aural S.s. Also First Asst. to one of the five Surg. Firms. £400.
London Lock Hospital, 283, Harrow-road, W.—Second H.S. £150.
London School of Hygiene and Tropical Medicine.—Lecturer on Trop. Hygiene. 200 guineas per annum.
Manchester, Crossley Maternity Hospital, Ancoats.—Half-time Res. M.O. at rate of £50.
Manchester Royal Infirmary and Dispensary.—Hon. Asst. Gynæcol. S.
Manor House Hospital, Golders Green, N.W.—H.S. £200.
National Hospital for the Paralysed and Epileptic, Queen-square, W.C.—Asst. P.
New Zealand Government Mental Hospitals Dept.—Two Asst. M.O.s. £615.
Notts Education Committee.—School Dentist. £500.
Porth and District Hospital, Glam.—Res. S. £750.
Royal Westminster Ophthalmic Hospital, King William-street, Strand, W.C.—Refraction Asst. at rate of £100.
Sheffield Jessop Hospital for Women.—Sen. Res. O. at rate of £250.
Sheffield University and Jessop Hospital for Women.—Asst. and Demonstrator of Anatomy. £300.
Sudan Government Wellcome Tropical Research Laborato Khartoum.—Asst. Bacteriologist. £1 720.
Sunderland Royal Infirmary and Children's Hospital.—H for Nose, Throat, and Ear work.
Surrey County Council.—Asst. M.O.s in Pub. Health Dept.

to be treated is 100 yards in length, 15 yards in width, and 6 inches in (average) depth, then the area A is 1500 square yards, and the amount of larvicide required is

$$\frac{1500 \times 6}{6000} \text{ or } 1\tfrac{1}{2} \text{ gallons.}$$

When adding the larvicide to the infested water, care should be taken to distribute it as uniformly as possible. In any case it is better first to dilute the total "dose" with three or four times its bulk of fresh water and then introduce the mixture by instalments. One way is to use a watering-can with a rose nozzle, the operator wearing "waders" and treating successive "strips" of the water. Another very effective method is to "sling" the successive instalments of the mixture out of an ordinary handbowl. Very little practice is required to distribute the mixture uniformly and rapidly in this way.

Safety of Domestic Animals.

A great deal of prejudice exists against the use of larvicides, owing to the popular idea that anything which is capable of killing a mosquito larva will render the water equally unsafe for domestic animals, or even human beings, who may happen to drink it. To show the fallacy of an argument of this kind, consider the case of White Cross disinfectant, and assume that it is being employed in a strength of 1 in 28,000, which is the proportion recommended. Water thus treated may be drunk by domestic animals with absolute impunity. The constituents of this fluid are, indeed, actually employed in veterinary medicine—and even to obtain a *safe medicinal dose* of the very diluted mixture in question a cow would have to drink more than 100 gallons, a horse more than 80 gallons, a pig more than 20 gallons, and a dog more than 10 gallons. Even a hen would not have taken her safe medicinal dose until she had consumed just on 2 gallons of the treated water. There is, therefore, no danger whatever to be apprehended from the use of this liquid in the proportion necessary; and in the treatment of open and exposed breeding-places its use is much to be preferred to that of paraffin.

In dealing with sheltered breeding places, the question of which method shall be adopted is largely one of expense. It must be remembered that when paraffin is used the amount required depends only upon the area of surface to be treated, but in the case of a larvicide, which has to diffuse throughout the whole body of water, the depth of the water is also an important factor. If the thickness of an effective paraffin film is assumed to be 1/1500 inch, then the cost of treating a piece of water of depth *d* inches with a larvicide which is *c* times as expensive as paraffin, and which has to be mixed with the infested water in a strength of 1 in *n*, is

$$\frac{1500 \times c \times d}{n}$$

times the cost of paraffining the same piece of water. In the case of any larvicide for which *c* and *n* are known, it is easy to calculate the depth of water at which the cost of paraffining and larviciding are the same. With White Cross fluid, for example, the dilution recommended is 28,000 and the cost about four times that of paraffin. Insertion of these values in the above formula shows that the depth in question is 4⅔ inches, and for any depth less than this the larvicide in question is the more economical method of the two.

Nuisance at Seaside Resorts.

In intertidal areas where sea water is allowed to accumulate and stagnate, the larvæ of the salt water mosquito (*Ochlerotatus detritus*) are generally to be found in enormous numbers throughout every month of the year. The adults of this species (which hatch out almost continuously from April until November) have a much greater range of flight than any of the non-salt water mosquitoes, and this fact considerably increases the difficulties of mosquito control work in low lying coastal districts. It may be stated definitely that the "mosquito nuisance" experienced in so many of our seaside resorts is most frequently caused by salt-water mosquitoes invading the residential district from breeding places situated on the outskirts of the town. Hence the attempts occasionally made by local authorities to alleviate the nuisance by paraffining collections of stagnant water within the residential district only are in the majority of cases to be deprecated, not only because they are a sheer waste of public money, but also because their futility tends to diminish public confidence in anti mosquito work generally.

As regards the various species of mosquitoes which breed in non salt water, it should be noted that long established collections of water, such as ornamental lakes, cattle ponds, &c., frequently contain fish, water bugs, and other creatures which devour mosquito eggs and larvæ and thus render mosquito breeding impossible. Under these conditions the addition of larvicide is not only unnecessary but may actually do harm by destroying some or all of the benevolent "mosquito enemies" present. Hence water should never be treated with larvicide unless the presence of larvæ has been actually observed.

NATIONAL COUNCIL FOR THE UNMARRIED MOTHER AND HER CHILD

THE annual meeting took place at Carnegie House, 117, Piccadilly, on June 18th under the presidency of Lord Henry Cavendish Bentinck, his place being later taken by Mrs. H. A. L. Fisher. The annual report and balance sheet were read and passed, and the officers and members of the executive committee were elected. Mrs. W. A. Potts of Birmingham read a paper on the Mental Deficiency Act as it affects Unmarried Mothers. A considerable number of the unmarried mothers who applied for Poor-law relief, she said, were mentally defective and they constituted the real problem. The Mental Deficiency Act provided for placing in an institution or under guardianship women who were mentally deficient and were in receipt of Poor-law relief; the guardians therefore incurred responsibility if they discharged a mother of more than one illegitimate child without bringing the facts before the Mental Deficiency Committee. Among cases known to her personally who had been discharged without examination, Mrs. Potts mentioned: (1) A girl of 16 with two illegitimate children. She had a mentally defective brother aged 25. (2) A woman of 30 with four illegitimate children. There was a defective sister of 27. (3) A girl of 19 with two children. She had attended a special school. It was far the most merciful thing to put these women under supervision. They would only be properly cared for when the Mental Deficiency Act was used to its full extent.

Lady Nott Bower said the question of certification was difficult because, before a doctor could certify a girl as mentally deficient, he had to produce evidence of deficiency from an early age. She advocated the establishment of more hostels under good management where the girls could have work graded according to their capacity. The babies should remain with their mothers up to the age of 2 years, after which there were a good many associations which took children without their mothers. It was pointed out in discussion that the fact of sexual obsession implied in having several illegitimate children did not of itself constitute certifiable mental deficiency.

MOTHERCRAFT.

THE well-known little book entitled "Mothercraft,"[1] which consists of a selection from lectures delivered under the auspices of the National Association for the Prevention of Infant Mortality, has almost reached the stage when it might well be called the "Mothercraft Annual." Each edition, and this is the fifth, has shown signs of careful revision, and while the size of the book has not been greatly altered the material it contains represents the very latest teaching on all the various branches of the "craft." Miss Norah March's article on the psychology of the infant in this edition is something rather novel, and while prevention is an admirable slogan when dealing with mental as well as with physical disorders, it is doubtful whether the average mother will effectively understand much of this article. An advertisement for ultra-violet light lamps has crept into the middle of an article on the sun cure and its substitutes by Percy Hall, but despite these minor defects, the book still remains a most valuable guide to the subject of mothercraft, the essentials of which, as Dr. G. F. Still says in his introduction, "it is high time that every girl as a part of her education should be required to learn."

COLONIAL MEDICAL SERVICES: EXPENDITURE ON RESEARCH

IN reply to questions by Lieut.-Colonel Angus McDonnell in the House of Commons on June 15th and 22nd, Mr. Amery gave some figures of expenditure on medical research work in certain Crown Colonies and Protectorates. Such expenditure, said Mr. Amery, is provided separately in the Budget of each Colony or Protectorate, and in view of the additions made to the territories the figures would not give a satisfactory standard of comparison. He contented himself, therefore, with giving, so far as they can now be ascertained, the amounts provided for the years 1901 and 1924 for Trinidad, Hong Kong, and the Gold Coast respectively, as representing three of the four important divisions of the Colonial Empire. The fourth, East Africa, was not administered by the Colonial Office in 1901. Expenditure on

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[1] Fifth edition, revised and enlarged. London: The National League for Health, Maternity and Child Welfare. 1925. Pp. 400. 4s. 6d.